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DISEASES CAUSED BY BACTERIA AND FUNGI

Thörne, H. & Wallmark, G. (1960). **Studies on staphylococcal mastitis in an individual herd with special reference to phage-types of isolated staphylococci.**—Acta vet. scand. **1,** 114-120. [In English. Summaries in German and Swedish.] 2432

On 3 occasions during 15 months, the authors examined for staphylococci milk samples from a herd of 34 cows. At various times samples were also taken from udder skin, the cowshed stalls and air, milking equipment, and the noses, throats and hands of the attendants.

With the exception of one isolate from a cowman's hands, all the staphylococci recovered had the same phage pattern and antibiotic sensitivity. Their mode of spread is discussed.

The antistaphylolysin [type of lysin not stated] titres of the cows' sera were determined on one occasion and correlated with the clinical and bacteriological findings.

—I. DAVIDSON.

Loken, K. T. (1959). **Studies on infection of the bovine mammary gland with staphylococci.** Dissertation, Minnesota pp. 115. [Abst. from Diss. Abstr. **20,** 1130.] 2433

Udder infections with *Staph. aureus* were studied to determine the extent, clinical characteristics, and epidemiology of the infections and the characteristics of the organisms.

514 cultures of staphylococci from 33 dairy herds were subjected to the action of 24 bacteriophages and grouped according to the pattern of lysis. Lysis by phage 42D (Group IV) was the most frequent observation and by phages of Group III the next. 21 of 24 herds from which typable staphylococci were isolated contained only one group. Limited studies suggested that typable strains were more pathogenic than the non-typable.

The milking machine was a major factor in the spread of infection.

A survey of penicillin resistance in *Staph. aureus* from bovine udders revealed that 80% of 365 strains from 30 herds were susceptible to 0·1 unit of crystalline penicillin G per ml. of broth. The majority of the penicillin resistant strains were lysed by phages of Group III. Several penicillinase-producing coagulase-negative micrococci were isolated from milk samples. Attempts to induce penicillin resistance *in vivo* were not successful.

Sellers, T. F., Jr. & LeMaistre, C. A. (1960). **Experimental staphylococcal infection in mice: observations on the effects of inoculum size, strain variation, penicillin, and cortisone.**—J. Lab. clin. Med. **55,** 199-215. [Authors' summary modified.] 2434

Alterations in the bacterial populations of the individual organs caused by variations in the size of the inoculum and the strain of staphylococcus are described. The alterations in the fate of staphylococci after administration of an effective antibiotic and cortisone, used singly and in combination, are reported.

Wick, W. E., Holmes, D. H. & Boniece, W. S. (1960). **Antipenicillinase serum: use in treatment of resistant staphylococcal infections in laboratory animals.**—Antibiot. & Chemother. **10,** 71-77. [Summary in Spanish p. 132. Authors' summary modified.] 2435

Rabbits immunized with *Bacillus cereus* penicillinase produce antibodies that prevent inactivation of penicillin by the enzyme.

The titre of the antiserum prepared against *B. cereus* penicillinase was significantly lower than that prepared against *Staphylococcus aureus* penicillinase; this is suggestive of an immunological difference between the two enzymes.

Antipenicillinase serum was beneficial in

preventing infection by virulent penicillin-resistant staphylococci if the antibody and penicillin were present either before or shortly after infection. The combination did not affect the number of staphylococci in the kidneys when penicillin treatment was delayed.

Robinson, J., Thatcher, F. S. & Montford, J. (1960). **Studies with staphylococcal toxins. V. Possible identification of alpha hemolysin with a proteolytic enzyme.**—Canad. J. Microbiol. **6,** 183-194. [Part of authors' abst.] **2436**

The possibility that alpha haemolysin is a specific proteolytic enzyme is suggested by the observation that under no conditions could a separation be effected between the haemolytic and proteolytic properties of the alpha haemolysin recovered from a number of different cultures.

Gray, D. M. & Schalm, O. W. (1960). **Interpretation of the California mastitis test results on milk from individual mammary quarters, bucket milk, and bulk herd milk.**—J. Amer. vet. med. Ass. **136,** 195-198. **2437**

Reactions to the California test were classified as 1 (weak positive), 2 (distinctly positive) and 3 (strongly positive) in monthly tests on samples from about 14 cows over a period of 10 months.—T.E.G.R.

Weigt, U. (1959). Der Gelbe Galt im papier-elektrophoretischen Bild. **[Paper electrophoresis in bovine streptococcal mastitis.]** — Milchwissenschaft **14,** 477-481. [Summary in English.] **2438**

Paper-electrophoretic examination of whey for the diagnosis of chronic streptococcal mastitis in cows was described. It was suitable in cases where bacteriological diagnosis had failed.—E.G.

Compagnucci, M. (1959). Ricerche sulla specificità della doppia diffusione. Precipitazione in gel di agar con antigeni di carne (bovina, equina, suina e ovina) e del B. anthracis e con i respettivi sieri precipitanti. **[Specificity of the double gel diffusion test for anthrax.]** — Acta med. vet., Napoli **5,** 489-505. [Summaries in English and Spanish.] **2439**

C. gives results of the double gel diffusion test against antigens of meat from various animals made either in the cold or after heating; lines of precipitation formed between 24–36 hours and were still evident even after 1 month. The reaction was specific, controls being always negative. Comparison of tests with *Bacillus anthracis,* and *Clostridium chauvoei* with specific anthrax serum were positive for anthrax only. C. states that since the test is specific it can be used as a routine test.—W. K. Dunscombe.

Jacotot, H. & Virat, B. (1960). Vaccination contre l'infection charbonneuse par injection de bactéridies tuées en excipient huileux. Première note. **[Immunization against anthrax by injection of killed bacteria in oily excipient.]**—Ann. Inst. Pasteur **98,** 297-300. [Summary in English.] **2440**

Rabbits inoculated with capsulated anthrax bacilli killed by formol did not develop immunity, and only 2 of 21 given formolized non-capsulated bacilli resisted challenge. When the killed bacilli were incorporated in an adjuvant consisting of 8 parts liquid paraffin and one part mannide mono-oleate ("Arlacel A"), capsulated bacilli protected 10 of 26 rabbits against challenge, and non-capsulated 21 of 31.—M.G.G.

Arkhipov, V. V. (1959). **[Use of atomic energy for disinfecting hides, furs, wool and bristles.]**—Trudy Vsesoyuz. Inst. vet. Sanit. i Ektoparasit. **14,** 43-45. [In Russian.] **2441**

Vegetative forms of *Bacillus anthracis* on hide, fur, wool and bristles were killed by exposure to 104,000 roentgens from radioactive cobalt, but not by 99,900 roentgens. Spores were killed by 530–600 thousand roentgens. Spores that resisted exposure lost their virulence.—M.G.G.

Thorne, C. B., Molnar, D. M. & Strange, R. E. (1960). **Production of toxin in vitro by Bacillus anthracis and its separation ino two components.**—J. Bact. **79,** 450-455. [Authors' summary modified.] **2442**

B. anthracis produced toxin in a Casamino acids medium without added serum or other protein. The toxin was separated into two components by filtering through fritted glass filters. One component, which appears to be the protective antigen, was present in the filtrate. The other component, referred to as filter factor, was adsorbed on the glass filter and could be eluted with alkaline buffer. Each of the factors was non-toxic when tested alone but when added together they formed a toxic mixture as evidenced by skin reactions in g.pigs and lethality tests in mice. The toxin was neutralized by *B. anthracis* antiserum.

Lamanna, C. & Eisler, D. (1960). **Comparative study of the agglutinogens of the endo-**

spores of Bacillus anthracis and Bacillus cereus.—J. Bact. **79,** 435-441. [Authors' summary modified.] **2443**

Rabbit antisera against endospores of *B. anthracis* and *B. cereus* were prepared and studied by agglutination tests. Antigens specific to the spore phase were shown to exist. The antigenic constitution of the endospores of both organisms is complex and includes both intra- and interspecies agglutinogens. It was not possible to distinguish between the endospores of the two organisms by agglutination tests.

Klein, H. & Kunter, E. (1960). Reinfektionen tuberkulosefreier Rinder durch Rücklieferungsmilch der Molkereien. **[Re-infection of tuberculosis-free herds through skim milk from dairies.]** — Mh. VetMed. **15,** 224-226. **2444**

1,203 samples of skim milk from 22 dairies were inoculated into g.pigs. 29 samples (2·8%) contained tubercle bacilli. The authors gave no actual proof of re-infection of herds from this source, but they suggested monthly inspection of dairies in order to exclude the possibility.—R.M.

Milbradt, H. & Roemmele, O. (1960). Tuberkulőse Katze infiziert Rinderbestand. **[A tuberculous cat as source of infection in a herd of cattle.]**—Dtsch. tierärztl. Wschr. **67,** 17-18. [Summary in English.] **2445**

A herd of cattle which was freed from TB. after an eradication programme was found to be re-infected one year later. The cause was a cat which had formerly been fed on milk from a cow with tuberculous mastitis. It seems possible that after passage (*i.e.*, cow, cat, cow) the virulence of *Mycobacterium tuberculosis* may be enhanced.

—Irene M. Grisedale.

Dhanda, M. R. & Lall, J. M. (1959). **Systematic control and eradication of tuberculosis among cattle and buffaloes in self-contained herds.** — Indian vet. J. **36,** 467-472. **2446**

A note recommending test and segregation, with destruction of clinical cases only, rather than wholesale slaughter of all reactors, in view of the comparatively non-progressive character of the lesions in Indian cattle and of the bullock requirements for agricultural operations.—R. N. Mohan.

Nyiredy, I. & Vizy, L. (1960). A tőgygümőkór gyors laboratóriumi kórjelzése. **[Rapid laboratory diagnosis of mammary tuberculosis in cows.]**—Mag. állator. Lapja **15,** 5-8. [In Hungarian. Summaries in English and Russian.] **2447**

Milk samples from 2,600 cows either clinically affected with TB. or positive to the tuberculin test but with no evidence of affection of the udder and whose milk clotted normally, all gave a negative reaction in the complement-fixation test for TB. It was concluded that TB. antibodies may be present in the milk only when certain conditions permit blood serum to pass to the milk, *e.g.* at the onset of lactation, in haemorrhage into the udder, or in acute mastitis. On the other hand, c.f. tests on milk samples of 3 cows revealed mammary TB. although bacteriological and cytological examination of milk did not suggest the condition. On the basis of these findings the authors added the c.f. test to the routine cytological examination described by Ziegler (1953) [see *V.B.* **24,** p.222] and microscopic examination for tubercle bacilli for the rapid diagnosis of mammary TB. from milk samples.

—A. Sebesteny.

Meyn, A., Schliesser, T. & Bederke, G. (1959). Zur Frage der Abklärung unspezifischer Tuberkulinreaktionen mit verdünntem Rinder-Einheitstuberkulin. **[Diluted tuberculin for testing non-specific reactors. I.]** — Rindertuberk. u. Brucellose **8,** 179-185. **2448**

Meyn, A., Bederke, G. & Schliesser, T. (1959). Zur Frage der Abklärung unspezifischer Tuberkulinreaktionen mit verdünntem Rinder-Einheitstuberkulin. **[Diluted tuberculin for testing non-specific reators. II.]** —Ibid. **8,** 186-202. **2449**

I. Intradermal tuberculin tests in g.pigs and pigs infected experimentally with tubercle bacilli of bovine or avian types revealed that tuberculin diluted a hundredfold was more specific than undiluted tuberculin.

II. All of 100 tuberculous cattle gave a positive reaction to the i/d injection of 0·1 ml. of diluted bovine tuberculin containing 500 tuberculin units. Another group of 100 tuberculous cattle was tested simultaneously with diluted tuberculin and undiluted tuberculin (5,000 units); only 11 were positive to the diluted tuberculin whereas all 100 were to the undiluted tuberculin. Of 150 doubtful reactors from attested herds inoculated with diluted bovine tuberculin 6 were positive, 32 doubtful and 112 negative. Two of the 6 positive cattle were slaughtered and found to be tuberculous.

—M.G.G.

Landau, M., Peled, D. & Nobel, T. A. (1959). **[Paratuberculosis (Johne's disease) of sheep in Israel. I. Epizootiological, clinical and pathological aspects.]**—Refuah vet. **16,** 156-163. [In Hebrew.] [In English. p. 213.] **2450**

Tamarin, R., Nobel, T. A. & Neumann, F. (1959). **[Paratuberculosis (Johne's disease) of sheep in Israel. II. Laboratory diagnosis.]** —Ibid. 163-168. [In Hebrew.] [In English. p. 209.] **2451**

I & II. In Israel, ovine Johne's disease was first diagnosed in 1958 and within 15 months it was confirmed in 23 flocks in all parts of the country. Annual losses in infected flocks have not exceeded 2%, the majority occurring in ewes, 3–5 years old, while rearing lambs. The only symptom common to all cases has been gradual loss of condition despite a normal appetite; watery diarrhoea has been rare. The avian tuberculin test has been of little value in determining infection in the individual, but the use of the complement-fixation test on reactors to the allergic tests appeared of value in determining the status of a flock. In clinically suspect cases, bacteriological examination by Kinyoun's method of smears of pre-treated faeces detected 76% of cases found infected P.M. Smears from portions of intestine showing changes or from the anterior portion of the ileum or jejunum were usually positive; lymph nodes were of no additional help. Histological examination was used if these methods proved negative. Growth of the causal organism was obtained only on Smith's solid or liquid media after 6–16 weeks, but no orange pigmented strains were encountered. Hole's c.f. test, adapted for use on sheep serum, detected 91% of clinical cases and 75% of pre-clinical cases, but also gave a positive or suspicious reaction in 31% of sheep with no demonstrable infection: when used in conjunction with faecal examination, all affected animals were detected.

—A. Ackroyd.

Retnasabapathy, A. & Priestley, F. W. (1959). **A note on Johne's disease at the Paroi Animal Husbandry Station, Malaya.**—J. Malay. vet. med. Ass. **2,** 117-120. **2452**

Johne's disease was confirmed in a herd of 100 Sindhi cattle. Of 19 bulls recently distributed from this herd 4 were positive to the c.f. test; in-contact animals were negative but spread of the disease to local cattle is feared.

—E.V.L.

Rice, C. E., Annau, E. & Konst, H. (1960). **Studies of Johne's disease in Canada. VIII. Complement-fixation tests with protein fractions of Johne's bacilli.**—Canad. J. comp. Med. **24,** 96-105. [Authors' summary modified.] **2453**

Protein fractions prepared by urea extraction of unheated Johne's bacilli have been tested for complement-fixing activity with antisera from g.pigs and cattle immunized with Johne's bacilli suspended in Freund-type adjuvant. The higher dilution titres of the earlier lots of protein with these antibacterial sera were apparently traceable to their contamination with carbohydrates extracted from the bacilli. Later fractions prepared by a modified method involving more prolonged extraction with urea solution, reacted to a lesser degree with these antibacterial sera and had relatively higher titres than the earlier lots with antisera produced in g.pigs by the repeated i/m injection of P.P.D. johnin in Freund-type adjuvant.

Tests of serial blood samples from g.pigs or cattle immunized with Johne's bacilli showed the earlier development of anticarbohydrate than of antiprotein antibodies. Sera of six cattle with proven or suspected Johne's disease, fixed complement weakly with the purified protein but the other 45 tested were negative. G.pigs immunized with johnin P.P.D. or bacterial proteins in adjuvant developed antibodies that reacted with johnin P.P.D. as well as Johne's bacillus protein.

Annau, E. (1959). **Preparation of a highly purified carbohydrate-free johnin protein.**—Nature, Lond. **184,** Suppl. No. 21 pp. 1642-1643. **2454**

A description is given of a method of obtaining purified protein from *Mycobacterium johnei* by extraction in urea solution. The product when tested by intradermal injections in sensitized g.pigs appeared to have a higher potency than that obtained by standard methods, and repeated i/d injections failed to sensitize g.pigs.—W. E. Parish.

Kuper, S. W. A. & May, J. R. (1960). **Detection of acid-fast organisms in tissue sections by fluorescence microscopy.**—J. Path. Bact. **79,** 59-68. [Authors' summary modified.] **2455**

A method is described for eliciting fluorescence of acid-fast organisms in tissue sections. It is suitable also for examination of sputum, culture preparations and tissue smears.

The functions of the reagents in the staining technique are analysed.

Although the method is intended for the detection of "acid-fast" organisms, it seems likely that the stage of acid-alcohol differentiation may in fact be omitted, whereas treatment with potassium permanganate is essential. A large series of tests on known acid-fast and non acid-fast organisms will be necessary, however, to determine whether or not "permanganate-fastness" always reflects "acid-fastness". [One of 8 illustrations on a colour plate is of *M. johnei* in an intestinal ulcer.]

Carda, P., Barros, C. & de Salamanca, M. E. (1959). Sobre una epizootia por "Bacillus piliformis" en un vivero de ratón blanco común. **[Epidemic of B. piliformis infection in a colony of white mice.]**—An. Inst. Invest. vet., Madrid **9,** 153-160. **2456**

A sudden outbreak killed 176 of 234 mice within four days. Oxytetracycline in the drinking water appeared to control infection in the remainder of the colony and there were no further losses a week after treatment started.—R.M.

Rogiński, Z., Grodzki, E. & Zajfertowa, J. (1960). Próbny oceny wartości niezjadliwej kultury różycowej Stauba wyprodukowanej na podłożu z hydrolizatem grochu. **[Evaluation of avirulent Erysipelothrix rhusiopathiae grown on pea hydrolysate medium.]** —Med. Wet. Warszawa **16,** 11-14. [In Polish. Summaries in English and Russian.] **2457**

Avirulent (Staub) *E. rhusiopathiae* culture grown on pea hydrolysate medium proved harmless to mice and pigs. A 23-day-old avirulent culture conferred on pigs immunity lasting at least 94 days. The authors consider that low cost of production of the new medium justifies further laboratory and field studies.

—M. Gitter.

Skalka, B. (1960). L-cyklus Erysipelothrix rhusiopathiae vyvolaný penicilinem. **[L-cycle of Erysipelothrix rhusiopathiae produced by penicillin.]**—Sborn. čes. Akad. zemědělsk. Věd. vet. Med. **5,** 195–204. [In Czech. Summaries in English and Russian.] **2458**

S. studied the influence of penicillin on morphological changes in 30 strains of *E. rhusiopathiae,* grown on agar/horse serum media, containing from 0·01–1·0 i.u. of penicillin/ml. medium. Penicillin at 0·5–1·0 i.u./ml. produced temporary growth which was followed by lysis, concentrations of 0·05–0·01 marked growth and slight vacuolization, followed 24–30 hours later by filament formation, which later reverted to rods. On media containing 0·25, 0·1 and 0·075 i.u. of penicillin/ml., the L-cycle was characterized by the formation of giant vacuolated cells from the original rods. Some giant cells and L-colonies reverted after 6–8 days' cultivation to secondary rods which resembled the original culture morphologically, biochemically and in penicillin sensitivity.—E.G.

Handa, R. K. (1959). **Studies on Pasteurella septica (P.52). (I) Optimum requirements.**— J. vet. Res., Mhow. **3,** 40-52. **2459**

The conditions found optimum for growth were: 0·11 mg. meat-extract nitrogen and 0·14 mg. peptone nitrogen per ml., 0·8% sodium chloride, pH 7·5, and incubation temperature 39°C. When all these conditions were combined, the growth obtained was double that in ordinary nutrient broth.

—R. N. Mohan.

Saxena, S. P. & Hoerlein, A. B. (1959). **Lysogeny in Pasteurella. I. Isolation of bacteriophage from Pasteurella strains isolated from shipping fever and those from other infectious processes.**—J. vet. Res. Mhow **3,** 53-66. **2460**

Using Fisk's cross-culture technique, the authors demonstrated lysogenicity in 63 of 112 strains of *Pasteurella* from different sources. One of the phages isolated was lysogenic for 8 strains, while many were lysogenic for only 1 or 2. Phages from the turkey strains lysed *Pasteurella* from almost all species, and those from the calf strains lysed *Pasteurella* from pigs, turkeys and fowls but not from cattle and sheep.—R. N. Mohan.

Strogov, A. K. (1959). **[Plague in camels.]** In "Maloizvestnye zaraznye bolezni zhivotnykh" pp. 262-280. [Moscow: Sel'khozgiz.] [In Russian.] **2461**

A review of the literature on *Pasteurella pestis* infection. Apparently the last recorded case in the U.S.S.R. was in 1926 (A. K. Ignatev). In 1946 E. I. Korobkova described the preparation of anti-plague serum in camels. Since this review was prepared V. N. Lobanov [*V.B.* **30,** 24] has described experimental infection in camels.—R.M.

Beer, J. (1960). Über das Vorkommen und über die Rolle von Bordetella (B.) bronchiseptica bei Lungenerkrankungen einiger Haus- und Laboratoriumstiere. **[Role of Haemophilus bronchisepticus in respiratory diseases of some domestic and laboratory animals.]**—Zbl. Bakt. I. (Orig.) **177,** 208-

214. [Summaries in English, French, Spanish and Russian.] **2462**

H. bronchisepticus was isolated from the lungs of rats from 3 colonies with endemic respiratory disease, the lungs of g.pigs from 2 colonies with epidemic pneumonia and the lungs of a pig with swine influenza. Results of experimental infection of rats, mice and g.pigs suggested that the organism plays only a secondary role in respiratory diseases.

—M.G.G.

Takács, J. & Nagy, G. (1960). **An Escherichia coli strain possessing the O antigens of Salmonella onderstepoort.**—Acta vet. Sci. hung. **10,** 165-168. [In English. Authors' summary modified.] **2463**

A strain from frozen pig liver having the same O antigens as *Salmonella onderstepoort,* is described. Despite its having *Salmonella* O antigens it was regarded as *Escherichia coli,* because its cultural properties were typical of the *Escherichia* group. It was identical with the *E. coli* strain E 73 described by Kauffmann.

Dixon, J. M. S. (1960). **The fate of bacteria in the small intestine.**—J. Path. Bact. **79,** 131-140. [Author's summary modified.] **2464**

A loop of small intestine was transposed to a subcutaneous position in rats. Inocula were introduced into the small gut without anaesthesia, and the fate of four bacterial species (including *E. coli*) in the small intestine was followed; the position of the organisms was traced by including an unabsorbed radiochromium marker in the inoculum. The results of 28 bacterial inoculations indicated that bacteria were rapidly moved onward and soon removed from the small intestine by peristaltic action. There was no indication of bactericidal action.

Mechanical removal by peristaltic action, aided by the secretion of mucus, is probably the main fate of viable organisms that enter the small intestine.

Rieder, R. F. & Thomas, L. (1960). **Studies on the mechanisms involved in the production of abortion by endotoxin.**—J. Immunol. **84,** 189-193. [Authors' summary modified.] **2465**

Escherichia coli lipopolysaccharide in doses as low as 5 μg. produced abortion in 85% of pregnant mice. This phenomenon was accompanied by haemorrhage into the decidua basalis and severe congestion of the placental labyrinth. When mice delivered live young spontaneously, this congestion was not seen.

The aborting effect of endotoxin probably does not occur simply as a result of making the mother ill. It appears that the abortion reaction is a specific type of endotoxin-induced lesion, mediated by an undefined mechanism, and displayed certain features in common with endotoxin-induced tumour haemorrhage.

Ballin, H. M. & Meyer, M. W. (1960). **Intestinal lymph flow in dogs after endotoxin.**—Proc. Soc. exp. Biol., N.Y. **103,** 93-95. [Authors' summary modified.] **2466**

In dogs there is a marked increase in intestinal lymph flow after injection of *Escherichia coli* endotoxin, and also after partial obstruction of the portal vein. The magnitude of the increase after endotoxin was not significantly correlated with the increase in portal venous pressure. But there was a highly significant correlation between the absolute portal venous pressure level during the increase in pressure after partial obstruction and the percentage change in lymph flow. There was a similarly significant correlation between the percentage change in lymph flow per unit increase in portal pressure and the absolute level of portal vein pressure. The increased lymph flow after injection of endotoxin can not be accounted for on the basis of the elevation in portal venous pressure but is perhaps due to the action of substances liberated by some chemical effect of endotoxin which influence lymph flow through some other mechanism.

Manten, A., Kampelmacher, E. H. & Guinée, P. A. M. (1960). Voorkomen van resistentie tegen chlooramfenicol en tetracycline bij 12014 gedurende de jaren 1958 en 1959 onderzochte Salmonella-stammen. **[Frequency of resistance to chloramphenicol and tetracycline among 12,000 salmonella strains in 1958 and 1959.]**—Tijdschr. Diergeneesk. **85,** 475-481. [In Dutch. Summaries in English, French and German.] [English summary modified.] **2467**

Of 12,014 strains isolated from animals or man, 250 or 2% were resistant to tetracycline, to chloramphenicol or both antibiotics.

In most cases it could be established that resistance was due to the use of these drugs in therapeutic or prophylactic doses.

Slavkov, I. & Delčev, C. (1960). Die Salmonella-brandenburg-Infektionen bei Schweinen. **[Salmonella brandenburg infection in pigs.]** —Zbl. Bakt. I. (Orig.) **177,** 143-144. **2468**

Of 152 pigs infected with salmonella, 8,

from 5 herds, were carriers of *S. brandenburg*. Salmonella was not demonstrable either in the pig food or in the stools of the attendants in these 5 herds.—M.G.G.

Bulling, E. (1960). Die Bakteriophagen-Differenzierung von Salmonella typhi murium. **[Differentiation of Salmonella typhi-murium by bacteriophage.]**—Berl. Münch. tierärztl. Wschr. **73**, 69-72. [Summary in English.] **2469**

Of 298 strains of *S. typhi-murium* 64% were typed with bacteriophages, 31% did not react with any of the phages, and 5% could not be typed. Of the freshly isolated strains 80% could be typed. Tables show the distribution of types according to origin and district. Most strains of type 1a came from pigeons, otherwise there was no relation between type and host animal species.—M.G.G.

Biozzi, G., Howard, J. G., Halpern, B. N., Stiffel, C. & Mouton, D. (1960). **The kinetics of blood clearance of isotopically labelled Salmonella enteritidis by the reticulo-endothelial system in mice.**—Immunology **3**, 74-89. [Authors' summary modified.] **2470**

The phagocytosis of ^{51}Cr or ^{131}I-labelled suspensions of heat-killed *S. enteritidis* by the r.e.s. has been compared with the kinetic laws which govern the clearance of stable colloid suspensions.

Clearance of bacteria followed an exponential function for the first few minutes, during which about 60% were phagocytosed. Thereafter, the rate of clearance became progressively slower. The maximum extraction by the liver and spleen was calculated as only 48%. Bacteria were phagocytosed in preference to carbon particles, but were taken up less readily than heat-denatured albumin. Blood clearance was promoted greatly by previous injection of specific immune serum and slightly by normal g.pig serum.

Further investigations suggest that apparent slowing in clearance is due to the fact that not all members of a bacterial population are equally susceptible to phagocytosis.

Hill, W. K. W. (1960). Een vergelijking tussen de Widal-reactie en een gemodificeerde complement-binding bij brucellose van runderen. **[Comparison of the agglutination test and a modified complement-fixation test for bovine brucellosis.]**—Tijdschr. Diergeneesk. **85**, 3-17. [In Dutch. Summaries in English, French and German.] **2471**

In Hill's modification of the c.f. test daily determination of the dilutions of complement was replaced by a simple standardization of the erythrocyte suspension. Agglutination and c.f. tests were compared on 5,460 sera. In 76% both were negative and in 5% both were positive. 12% of samples were negative to c.f. and positive to agglutination while 6% were positive to c.f. and negative to agglutination. —R.M.

Blunt, M. H. (1959). **The conception rates of beef cattle in the Gisborne district in relation to Strain 19 inoculation.** — N.Z. vet. J. **7**, 151-154. [Author's summary modified.] **2472**

In 8,943 cows from beef herds examined for pregnancy the conception rate in those inoculated with *Brucella abortus* Strain 19 was significantly better than in those that had not been inoculated. Two-year-olds had the lowest conception rate of all age groups of the inoculated cows.

Other causes of failure to conceive are discussed, and methods of improving the conception rate are suggested.

Kauker, E. & Zettl, K. (1959). Untersuchungen über die Empfänglichkeit des Rindes für die rektale Infektion mit Brucella abortus. **[Susceptibility of cattle to rectal infection with Brucella abortus.]**—Mh. Tierheilk. **11**, 320-323. **2473**

Experiments having shown that the introduction of a brucella suspension into the rectum could cause infection in g.pigs, the following tests were made on 2 cows:— (1) an infected rubber glove was put on and the procedures necessary in artificial insemination carried out, care being taken not to cause any lesions of the mucosa; (2) a glove was infected from a foetal placenta and inserted into the rectum, the mucosa being irritated by massage. Blood was sampled every 2 days for agglutination and complement-fixation tests; the latter was negative in both for the whole observation period; cow (1) had a rise in agglutination titre from the 11th to the 53rd day after infection, cow (2) had only a transitory rise. On slaughter cultures for brucella were negative in both.—W. K. Dunscombe.

Siennicki, W., Przyłęcki, S., Basz, I., Cygankiewicz, B. & Radziszewska, D. (1960). Występowanie brucelozy u pracowników służby weterynaryjnej i zootechnicznej w woj. wrocławskim. **[Incidence of brucellosis in veterinary and agricultural personnel in Wroclaw.]**—Med. Wet., Warszawa **16**, 22. [In Polish.] **2474**

123 out of 603 persons gave positive reactions to c.f. and agglutination tests. The

incidence was as follows: veterinary surgeons 48 of 131, veterinary nurses 44 of 144, veterinary technicians 26 of 68, animal attendants 3 of 210, and lay meat inspectors 2 of 42. No evidence of infection was found among the staff of artificial insemination stations. Some agglutination titres were very high—1 : 1,600 in 4, 1 : 800 in 5, 1 : 400 in 22 and 1 : 200 in 18. Acute or subacute brucellosis was diagnosed in 48 cases, chronic in 25; there were no symptoms in 40 and no further information could be obtained in 10. The authors recommend half-yearly testing of veterinary personnel, vaccination, and compulsory hospital treatment of clinical cases.

—M. GITTER.

Stinebring, W. R. & Braun, W. (1959). **Brucellaphage.**—J. Bact. **78,** 736-737. **2475**

A brucella bacteriophage of Russian origin showed definite lytic activity with plaque formation at limited dilutions. Only smooth and intermediate strains of *Br. abortus* including Strain 19 proved phage sensitive. Sometimes isolated mucoid and rough colonies grew out of areas of confluent lysis after exposure of smooth *Br. abortus* strains to the phage. The phage was easily propagated by exposing actively growing smooth *Br. abortus* cultures in buffered beef extract broth to a proper number of phage particles.

—A. ACKROYD.

Sprockhoff, H. (1960). Über die Inkonstanz des Melitensistyps der Gattung Brucella. **[Instability of Brucella melitensis.]**—Zbl. Bakt. I. (Orig.) **177,** 186-195. [Summaries in English, French, Spanish and Russian.] **2476**

After repeated subculture of 4 strains of *Br. melitensis* one reacted with immune serum against *Br. abortus* and not with serum against *Br. melitensis,* and all 4 formed hydrogen sulphide. [See also *V.B.* **26,** 384.]—M.G.G.

Shmuter, M. F., Lopatukhina, L. G., Sosunova, A. N. & Yastrebova, E. N. (1960). **[Influence of live brucella vaccines on Br. melitensis infection in guinea-pigs.]**—J. Microbiol., Moscow **31,** No. 4 pp. 58-60. [In Russian.] **2477**

39 g.pigs (and 13 controls) were each infected with 100 organisms of virulent *Br. melitensis* Strain 487. After 2 or 3 months they were inj. s/c with a large dose (100 million organisms) of Strain 19 vaccine, and were killed for bacteriological examination of organs 1–15 days later. There were fewer isolations of brucella from the organs of these g.pigs than from infected controls that did not receive Strain 19. The vaccine strain did not live long in infected animals.—R.M.

Entel, H. -J. (1959). Brucella-Bakterien in Fleisch und Fleischerzeugnissen. **[Brucella organisms in meat and meat products.]**—Berl. Münch. tierärztl. Wschr. **72,** 461-463. **2478**

E. investigated the brucella content of various fluids and tissues from cattle and sheep sent for slaughter as suspect and compared the resistance of the various strains to cold, heat, and (in raw sausage) to pickling or smoking. Of 82 suspect cattle with positive agglutination, brucella was found in the iliac lymph nodes in 18 and in the blood in 15; it was found in the pregnant uterus in all of 49 positive sheep, in the spleen in 41 and in the neck muscles in 3. As *Br. melitensis* is more pathogenic to man he suggests that to prevent human infection (1) slaughter of suspected sheep for human food should be prohibited; (2) as regards meat inspection, it is not necessary to condemn the whole carcass, but the udder, spleen, liver and the lymph nodes especially the iliacs should be condemned.

—W. K. DUNSCOMBE.

Polyakov, A. A., Ivanova, V. I. & Shakhalin, A. A. (1959). **[Simultaneous preservation and disinfection of sheepskins with brucella.]**—Trud. Vsesoyuz. Inst. vet. Sanit. **15,** 179-203. **2479**

From the results of lab. tests on Astrakhan furs and sheepskins the following mixture was recommended:- potash alum 20 g., sodium chloride 90–100 g., sodium silicofluoride 1 g., cupric acetate 0·5 g., potassium dichromate 0·5 g., water 1 litre. Brucella on skins were killed after immersion in this solution for 20 hours at 18–20°C.—R.M.

van Drimmelen, G. C. (1960). **Preliminary report on Brucella types isolated in South Africa.**—S. Afr. J. Sci. **56,** 5-9. **2480**

Properties of strains recently isolated at Onderstepoort from man, cattle, sheep and goats were compared. Those from man resembled *Br. melitensis* but those from sheep and goats resembled *Br. abortus,* although they were not typical. The author discussed the classification of brucella and suggested that strains should be classified as belonging to the melitensis, abortus or suis group according to the host from which they were isolated.—R.M.

Gorrie, C. J. R. (1959). **Diagnosis of ovine brucellosis.**—Aust. vet. J. **35,** 500-501. **2481**

G. advances reasons for discrepancies in the results of c.f. tests for ovine brucellosis. These include technical pitfalls in the test itself as well as the disease state of the animal. Vaccinated rams maintain a strong and very persistent titre. Epididymitis is not always due to *Brucella ovis* infection.—W. E. LAWRENCE.

Morgan, W. J. Brinley. (1960). **Comparison of various media for the growth and isolation of Brucella.**—Res. vet. Sci. **1,** 47-52. [Author's summary modified.] **2482**

A basal medium containing 0·5% (v/v) Tween 40 was able to support the growth of 80% of the *Brucella abortus* Wilson type II cultures studied. The other strains of *Brucella abortus, Br. suis, Br. melitensis* and intermediate types grew on the basal medium either with or without the addition of Tween 40.

The Tween agar medium containing the antibiotics bacitracin, polymyxin and actidione, with or without ethyl violet, as well as the Albimi-antibiotic medium, would not support the growth of *Br. abortus* type II strains.

Serum glucose agar plus antibiotics was the only selective medium which supported the growth of all the brucella cultures studied.

Milk samples from 45 cows artificially infected with *Br. abortus* Strain 544 (which is known to grow well on selective media) were cultured on various media. Of samples that were culturally positive on one or more of the media used, 80% were culturally positive on Albimi-antibiotic, 66% on serum glucose-antibiotic, 80% on Tween-antibiotic-ethyl-violet, 34% on thio blood agar plus antibiotics, 34% on Morris's medium and 30% on serum glucose agar plus dyes media.

The addition of 15 viable *Br. abortus* cells to 10 ml. of negative milk resulted in the isolation of the organism from 4 of the 12 plates when two 5-mm. loopfuls of the cream-deposit mixture were cultured.

Wundt, W. (1959). Untersuchungen über die Antigenstruktur von Intermediärstämmen aus der Gattung Brucella. **[Antigenic structure of strains of intermediate types of the brucella group.]** — Z. Hyg. InfektKr. **145,** 543-555. **2483**

W. compared quantitatively distribution of A and M antigens in typical and intermediate strains of brucella. The quantitative relationship of the two antigens appeared to be type-specific. These findings were discussed in relation to preparation of monospecific diagnostic sera and serological typing of strains.—E.G.

Sova, Z. (1960). Hodnocení aglutino-lysinové reakce při diagnostice leptospiróz u koní. **[The agglutination-lysis reaction in the diagnosis of equine leptospirosis.]**—Sborn. čes. Akad. zemědělsk. Věd. vet. Med. **5,** 205-216. [In Czech. Summaries in German and Russian.] **2484**

From data collected during 1956–59 in over 100 horses with various liver conditions, it was concluded that a positive agglutination-lysis reaction is proof of acute leptospirosis only when accompanied by a typical clinical picture, with marked increases in the titre ranging from 1 : 3,200–1 : 50,000. Single positive titres of 1 : 1,000–1 : 1,600 may be indicative of past, even subclinical infection. —E.G.

Musaev, M. A. (1959). **[Leptospirosis of cattle.]**—pp. 379. Moscow: Gosudarstvennoe izdatel'stvo sel'skokhoz. literatury. 6r. 80k. [In Russian.] **2485**

This monograph reviews advances in the study of bovine leptospirosis during the past ten years and is intended to supplement S.Y. Lyubashenko's monograph on leptospirosis in animals, published in 1948. The author, working at the Zoological Institute of the Azerbaijan Academy of Sciences, is already known for his publications on this subject, particularly the pathology of the central nervous system [*V.B.* **30,** 360] to which 12 pages and 20 photomicrographs are devoted in the present book. Another interesting feature is a chapter on leptospirosis in buffaloes, based largely on the author's own work in Azerbaijan. There is a valuable 27-page bibliography of Russian publications and a separate one for non-Russian publications. The book costs 9s. in the U.K.—R.M.

Dózsa, I., Kemenes, F. & Szent-Ivanyi, T. (1960). **Susceptibility of the red blood cells of ruminants with a four-chambered stomach (Pecora) to the haemotoxin of pathogenic leptospiras.**—Acta vet. Acad. Sci. hung. **10,** 35-44. [In English.] **2486**

An English version of a paper previously published in Hungarian [see *V.B.* **30,** 1727]. —M.G.G.

Hiramune, T., Yanagawa, R. & Fujita, J. (1960). **Effect of antibiotics and immune serum on Leptospira autumnalis localized in the kidneys of mice.**—Jap. J. vet. Sci. **22,**

11-15. [In English. Summary in Japanese.] 2487

Treatment was given daily for 3 days starting 15–17 days after subcutaneous infection. The occurrence of organisms in the kidneys was estimated 4 days after the end of treatment. Streptomycin and tetracycline eradicated the organisms, and so did kanamycin at high dosage (0·5 mg./g. body wt.). Procaine benzylpenicillin was rather less effective, but the organisms decreased or disappeared in most mice given large doses (800 units/g. body wt.). Hyperimmune rabbit serum was ineffective.—R.M.

Dominguez, O.R. (1959). Los antibióticos en el aislamiento de leptospiras. **[Addition of antibiotics to culture media for isolation of leptospires.]**—Rev. Invest. Ganad. No. 6 129-138. 2488

From experiments with cultures of *L. pomona* artificially contaminated with *Staph. albus, E. coli* or *Proteus vulgaris,* it was found that suppression of contamination was best with dihydrostreptomycin at a conc. of 100–200 μg./ml. acting for 24 hours, or chloramphenicol at 200–500 μg./ml. acting for 10 days. —R.M.

Kirschner, L. & Graham, L. (1959). **Growth, purification and maintenance of leptospira on solid media.**—Brit. J. exp. Path. **40,** 57-60. 2489

The preparation of solid media capable of maintaining growth of sero-types of all known groups of leptospira is described. It was found that variations existed in the requirements for growth-promoting compounds by different strains to obtain spreading growth on plates, though all the sero-types tested would grow in tubes.—W. E. Parish.

Mackey-Dick, J. & Robinson, J. F. (1959). **Penicillin in leptospirosis.**—Lancet October 3rd, 515-516. 2490

In human cases of leptospirosis in Malaya, penicillin given early and often enough and in large enough doses caused a response within 24 hours which was characteristic and diagnostic, while the treatment was specific.—W. K. Dunscombe.

Polykovskii, M. D., Lyashkin, A. V. & Kalimov, A. M. (1959). **[Serological diagnosis of braxy and infectious enterotoxaemia in sheep.]**—Trud. vsesoyuz. Inst. eksp. Vet. **22,** 76-92. [In Russian.] 2491

Hyperimmune sera prepared in rabbits and sheep against *Clostridium septicum, Cl. oedematiens,* and *Cl. welchii* Types A, B, C and D completely protected mice and g.pigs against the specific organism and gave specific precipitation reactions with antigens prepared from cultures and from the tissues of experimentally infected g.pigs. The best antigen was a polysaccharide fraction prepared from infected muscle.—M.G.G.

Orlans, E. S., Richards, C. B. & Jones, V. E. (1960). **Clostridium welchii epsilon-toxin and antitoxin.**—Immunology **3,** 28-44. [Authors' summary modified.] 2492

The epsilon-toxin of *Cl. welchii* Type D has been isolated in an immunologically and electrophoretically homogeneous state, by elution from diethylaminoethyl cellulose. Its combination with horse antitoxin was studied by neutralization tests *in vivo,* by the flocculation reaction (optimum proportions), by quantitative precipitation and by double diffusion in agar gel. The immunological and chemical relationships between the non-toxic precursor and the active toxin derived from it by tryptic (or other enzymic) hydrolysis, and toxoid made from either material by treatment with β-propiolactone, were also investigated.

Lambelin, G. & Ectors, F. (1960). Note préliminaire sur l'isolement et la pathologie de Vibrio foetus à Nioka (Ituri-Congo belge). **[Isolation and pathogenicity of Vibrio fetus in the Belgian Congo.]**—Ann. Méd. vét. **104,** 34-40. 2493

Twelve strains of *V. fetus* were isolated from 231 samples of vaginal mucus from 2 herds of European cattle, and 3 from aborted foetuses. 19 of 30 cattle were positive to the mucus agglutination test. Preputial washings from 5 bulls were negative, but 2 heifers yielded *V. fetus* a month after their first mating. Abortions were reported in 5 of 200 cows in 1958, but in none in the first 10 months of 1959. No strains were recovered from 154 samples of vaginal mucus from 6 herds of indigenous cattle, but 6 of 33 mucus agglutination tests were positive.—M.G.G.

Thils, E. (1960). Avortement à Vibrio foetus au Congo belge. **[Vibrio fetus abortion in the Belgian Congo.]**—Bull. agric. Congo belge **51,** 115-123. [In French. Summary in Flemish.] 2494

V. fetus was isolated (for the first time in the Belgian Congo, it is stated) from the placenta of an aborting cow.—T.E.G.R.

Dennis, S. M. & Jones, R. F. (1959). **A method for bulk growth of Vibrio fetus.**—Aust. vet. J. **35**, 457-460. **2495**

V. fetus was cultivated in a 22 litre vortex tank with a working volume of 13·5 litres. Aeration was provided by a cylinder containing air diluted by nitrogen to give 6% oxygen. The medium used was a succinate-cysteine-proteose peptone broth. The yield of vibrios was 0·6 g. dry weight per litre after 48 hours' growth. The bacteria, which were morphologically smooth, were suitable for mucus agglutination tests and for chemical fractionation.—R. V. S. Bain.

Kvashnina, E. S. (1959). **[I. Determination of the toxicity of feed-stuffs causing fusariotoxicosis in farm animals. II. Water-soluble toxic substance from fungi of the genus Fusarium.]**—Trudy Vsesoyuz. Inst. vet. i Ektoparasit. **14**. 88-89 & 89-90. [In Russian.] **2496**

I. By shaking in saline soln., extracts were made of feed-stuffs infested with species of *Fusarium* that had caused toxicosis in farm animals. Given to mice s/c, i/p or by mouth, they generally caused paresis, incoordination and death in 17–48 hours.

II. A fatty fraction and a fraction soluble in water were extracted with ethyl ether from cultures of 74 toxic and non-toxic strains of 13 species of *Fusarium*. The fractions of the toxic strains were toxic for mice. The fraction soluble in water of some strains resisted heating to 100° for 20 min.—M.G.G.

Overgoor, G. H. A. (1960). Twee gevallen van mycotische mastitis bij het rund. **[Mycotic mastitis in two cows.]**—Tijdschr.. Diergeneesk. **85**, 29-34. [In Dutch. Summaries in English, French and German.] **2497**

Mastitis was associated with *Candida krusei* in one cow and *C. albicans* in another. Both cows recovered after about 3 weeks' illness.—R.M.

Krejaković-Miljiković, V. & Stojanović, N. (1960). Kvasci kao uzročnici mastita posle terapije zaraznog presušenja vimena penicilinom. **[Yeasts causing mastitis in cows after penicillin therapy.]**—Vet. Glasn. **14**, 25-28. [In Croat. Summary in German.] **2498**

Saccharomyces fragilis was isolated from the milk of 12 cows which had previously been treated with penicillin for mastitis. With the isolated strains the authors produced mastitis in healthy cows. The inflammatory reaction to injection of penicillin together with *S. fragilis* was more severe than to saline-suspended *S. fragilis* alone.—E.G.

Osborne, A. D., McCrea, M. R. & Manners, M. J. (1960). **Moniliasis in artificially reared pigs and its treatment with nystatin.**—Vet. Rec. **72**, 237-240 & 241. [Authors' summary modified.] **2499**

"Thrush" caused by *Candida albicans* in artificially reared piglets is described. About half the infected piglets died. Predisposing factors are probably important both in relation to the onset and course of the disease.

The nature and extent of the lesion is described, particularly the marked tendency of *C. albicans* to affect the stratified squamous epithelium of the alimentary tract.

The results of experimental treatment with Nystatin are given and the possible significance of the use of antibiotics in the feed as a predisposing cause discussed.

Kuprowski, M. (1960). Patogeneza i morfologia moniliazy kuraków w świetle badań własnych. **[Pathogenesis and morphology of avian moniliasis.]**—Med. Wet. Warszawa **16**, 2-8. [In Polish. Summaries in English and Russian.] **2500**

K. reproduced blackhead (typhlo-hepatitis) and crop lesions in turkeys, 10 days to 4 months old, fed or infected i/p with a suspension of *Candida albicans* or internal organs of rabbits which died following i/v inj. of the fungus. Poults (10–14 days old) were most susceptible and from all except 2 of the birds *C. albicans* was recovered, mainly from the kidneys and lungs and sometimes from heart blood and liver. The modified Kühne-Weigert staining method demonstrated clearly the pseudohyphae in crop epithelium but not in internal organs from which the fungus was recovered culturally. Cultivation of the fungus on 10% blood agar at 39° to 43·5°C. produced β-haemolysis. K. considers that moniliasis is a toxaemia. [A German version of this paper has also been published in *Dtsch. tierärztl. Wschr.* **67**, 185-189.]—M. Gitter.

Nordstoga, K., Lindqvist, K. & Strande, A. (1959). **Coccidioidomycosis. Report of a case in a dog.**—Nord. VetMed. **11**, 461-468. [In English. Summaries in German and Norwegian.] **2501**

Disseminated infection with *Coccidioides immitis* is described in a 5-year-old Boxer dog imported from Nicaragua. Details of micro-

scopic examination of material from lesions and from culture are given in addition to photomicrographs.—IRENE M. GRISEDALE.

Spesivtseva, N. A. & Noskov, A. I. (1959). **[Epizootic lymphangitis in a camel.]**—Trudy Vsesoyuz. Inst. vet. Sanit. i Ektoparasit. **14**, 86. [In Russian.] **2502**

A brief report of *Histoplasma farciminosum* infection in a camel imported from Central Asia to the Moscow district, characterized by involvement of the prescapular lymph nodes. The microscopic appearance of the agent in the exudate was described.—M.G.G.

Saslaw, S., Carlisle, H. N. & Sparks, J. (1960). **Experimental histoplasmosis in monkeys.**—Proc. Soc. exp. Biol., N.Y. **103**, 342-344. [Authors' summary modified.] **2503**

Severe disease was produced in monkeys by yeast phase *H. capsulatum* administered intravenously and intratracheally. Monkeys inoculated intranasally developed a milder disease. No significant clinical signs of illness were seen in monkeys inoculated by the gastric route.

Noskov, A. I. (1959). **[Fungal antigen for treatment of ringworm in cattle.]**—Trudy Vsesoyuz. Inst. vet. Sanit. i Ektoparasit. **14**, 86-88. [In Russian.] **2504**

Nine calves with ringworm were given 8 daily s/c injections of an antigen prepared from autoclaved cultures of *Trichophyton*. Lysol ointment was applied 3 times at intervals of 4 days. The calves recovered completely. Control calves did not respond to Lysol alone. —M.G.G.

Kaffka, A. & Rieth, H. (1960). Trichophyton mentagrophytes-Varianten bei Laboratoriumstieren. **[Variants of Trichophyton mentagrophytes in laboratory animals.]**—Zbl. Bakt. I. (Orig.) **177**, 96-106. [Summaries in English, French, Spanish and Russian.] **2505**

Four strains of *T. mentagrophytes* were isolated from an outbreak of ringworm in rabbits and g.pigs. In culture, 3 resembled each other macroscopically, but all 4 differed microscopically. The most atypical strain had caused severe skin inflammation.—M.G.G.

Quaglia, G. L. (1959). Arquivos de patologia aviaria. II. Tigna favosa nell'anitra. **[Avian pathology. II. Duck favus.]**—Rev. Cienc. vet., Lisboa **54**, 268-278. [Summaries in English, French, German and Italian.] **2506**

An illustrated account of favus in ducks as seen in Italy. The disease was similar to that in fowls and was experimentally transmitted to fowls.—R.M.

Beerwerth, W. (1960). Generalisierte Aktinomykose (Nocardiose) beim Rind. **[Generalized actinomycosis (nocardiosis) in cattle.]**—Rindertuberk. u. Brucellose **9**, 1-9. **2507**

Lesions like those of tuberculosis in the lungs, liver and uterus of a cow were caused by a species of *Nocardia* closely resembling *N. leishmanii* and *N. caprae*. The organism was definitely not one of those normally pathogenic in cattle, *N. farcinica*, *N. asteroides* or *N. pulmonalis*.—E.V.L.

Kaushal, R. L. & Kangude, G. M. (1959). **Development of Kaushal's medium. Part I. Its adoption in general bacteriological work so as to replace meat broth. Part II. Its adoption for growing penicillium and other fungi.**—J. vet. Res., Mhow **3**, 5-16 & 17-27. **2508**

The authors prepared a cheap medium from papain-digested ground-nut cake, with spinach extract and saline-phosphate buffer added. The growth of a variety of pathogenic bacteria was invariably better in this medium than in ordinary nutrient broth. At pH 4–5, the medium was also found useful for growing fungi, and its use for economical production of antibiotics was suggested.

—R. N. MOHAN.

O'Connell, D. C., Wiggin, N. J. B. & Pike, G. F. (1960). **New technique for the collection and isolation of airborne microorganisms.**—Science **131**, 359-360. [Authors' abst.] **2509**

Pure cultures of airborne microorganisms are obtained by simple electrostatic attraction to small glass and plastic cylinders which are rolled over the surface of nutrient agar medium. Little equipment is required, and the necessary materials are inexpensive. Satisfactory qualitative sampling is possible under varying conditions of relative humidity.

Raggi, L. G., McMartin, D. A. & Adler, H. E. (1959). **Avian encephalomyelitis (AE) and Mycoplasma sp. infections.**—Poult. Sci. **38**, 1240. **2510**

During attempts to increase the pathogenicity of AE virus for chick embryos, a pathogenic pleuropneumonia-like organism was isolated from the original brain suspension. When chickens were inoculated parenterally with AE virus and a virulent strain of PPLO, alone or in combination, it was difficult to differentiate the central nervous system

lesions caused by the two organisms. PPLO could be recovered from the brains of chickens inoculated 6 weeks earlier intraperitoneally or intracerebrally and the majority developed agglutinins to the S6 antigen.—A. ACKROYD.

Dolowy, W. C., Hesse, A. L. & McDonald, G. O. (1960). **Oxytetracycline hydrochloride in the treatment of 590 rats in an outbreak of infectious catarrh.**—Illinois Vet. **3,** 20-24. **2511**

The disease was similar to that described by Nelson (1940) and attributed to coccobacilliform organisms. Oxytetracycline was given at the rate of 10 mg. per oz. of drinking water for 5 days. The percentage of animals with symptoms fell from 75% to 30%.

—M.G.G.

Hasegawa, S., Tsuchiya, A., Washio, T. & Tabuchi, K. (1959). **[Studies on pigs' tonsils. I. Micro-organisms isolated from pus in the tonsils of apparently healthy pigs.]**—Bull. Azabu vet. Coll., Japan No. 6 pp. 23-40. [In Japanese. Summary in English.] **2512**

Of 98 cultures, 63 were *Actinomyces* spp. (including 12 *A. israeli* and 13 *A. baudeti*); 19 were *Nocardia* spp. and the remainder were micrococci.—R.M.

Wilbur, R. D. (1959). **The intestinal flora of the pig as influenced by diet and age.**—Dissertation, Iowa pp. 84. Abst. from Diss. Abstr. **20,** 35. **2513**

The influence of diet was studied on 48 pigs weaned at two weeks. At six weeks of age half of the pigs were killed for bacteriological examination of duodenal, ileac, caecal, and rectal contents. All faecal organisms with the exception of the total anaerobes and lactobacilli were lower in numbers when lactose was fed in place of starch. Coliforms, streptococci, staphylococci, moulds and yeasts were also fewer with lactose feeding in all sections of the intestine. With most organisms counts increased sharply from the duodenum to caecum and only slightly from the caecum to rectum. The influence of diet on rectal counts generally reflected similar changes throughout the intestinal tract.

The intestinal tract of the new-born pig is relatively free from microbial growth, but within 24 hours bacteria reached their greatest density. Most of the organisms declined from one day of age up to weaning, then rose sharply to a level just below that attained at one day of age. Coliforms tended to decline in numbers from one day of age to market weight.

Of the organisms studied, the total anaerobes, total aerobes, and lactobacilli generally predominated with the streptococci, coliforms, staphylococci, moulds and yeasts usually following in that order. These relationships were influenced by age and also by location in the intestine.

The majority of Gram-negative rods isolated were *Escherichia coli,* of Gram-positive rods *Lactobacillus fermenti,* and of Gram-positive cocci *Streptococcus faecalis.*

Dubos, R. J. & Schaedler, R. W. (1960). **The effect of the intestinal flora on the growth rate of mice, and on their susceptibility to experimental infections.**—J. exp. Med. **111,** 407-417. [Authors' summary modified.] **2514**

Mice delivered by caesarian section were used to develop a new mouse colony protected from contact with common mouse pathogens, but not germ-free. These mice grew more rapidly than ordinary mice on complete diets; moreover, they continued to gain weight—although at a slower rate—when fed deficient diets which caused ordinary mice to stop growing, or lose weight.

They proved much more susceptible than ordinary mice to certain experimental bacterial infections, but were much more resistant to the lethal effect of large doses of endotoxins. However, they responded to injection of minute amounts of these endotoxins by a marked increase in susceptibility to staphylococcal infection.

There were striking qualitative differences when the intestinal flora was compared with ordinary mice. When contaminated (by contact or by feeding) with a strain of *E. coli* from the intestine of ordinary mice, they acquired the characteristics of ordinary mice with regard to weight gain on various diets, and to response to bacteria and endotoxins.

The mice were well suited to the study of nutritional, bacteriological, and immunological problems and it would be possible to produce them on a large scale.

See also absts. **2560** (combined canine hepatitis—leptospirosis vaccine); **2760-2761** (reports, Canada); **2762** (report, Australia); **2763** (book, clostridial infections of human beings).

DISEASES CAUSED BY PROTOZOAN PARASITES

Whiteside, E. F. (1960). **The control of animal trypanosomiasis in Kenya.**—In "Symposium on animal trypanosomiasis" pp. 81-116. [London: Commission for Technical Co-operation in Africa South of the Sahara (C.C.T.A.) Publ. No. 45.] 2515

The history of the control of animal trypanosomiasis in Kenya during the past 60 years makes a fascinating story. It was not until 1929 that it became suspected that tsetse flies were encroaching into many tribal areas of Kenya and as a consequence, trypanosomiasis became recognized as a major animal health problem.

The development of knowledge of the biology of the vector, sufficient to permit the spread of the disease to be reduced and land reclamation to proceed, is recounted. Insecticides and trypanocidal drugs have played an important part in the control of the disease, and their use in conjunction with other methods of control is discussed.

The introduction of drugs with potent prophylactic properties was an important advance. Until recently settlers in reclamation Schemes were not allowed to have stock until tsetse flies had been eradicated. With the introduction of new drugs, stock now enter at an early stage.

Current research is devoted to the following fields:—chemotherapeutic trials and the field application of the results; immunization and the selective breeding of resistant cattle; methods of tsetse control and land resettlement; the bionomics of the tsetse fly.

—L. P. Joyner.

Kutzer, E. (1960). Über die Kokzidien des Schweines in Osterreich. **[Coccidia of pigs in Austria.]**—Z. Parasitenk. **19**, 541-547. **2516**

Eimeria debliecki was isolated from the faeces of 265 (45%) of 595 pigs, *E. polita* from 101 (17%), *E. scabra* from 21, *E. spinosa* from 2 and *Isospora suis* from 17.

—M.G.G.

Kilgore, R. L. (1960). **Is feed medication the answer to coccidiosis in poultry?**—J. Amer. vet. med. Ass. **136**, 164-168. **2517**

When considering possible means of controlling coccidiosis among poultry, it is apparent that modern methods of mass production preclude adoption of conventional "hygiene". At least in broiler plants vaccination appears to offer no particular advantage over continuous preventive medication. Continuous medication of the food seems to offer the most hopeful method of control, although the ideal coccidiostat remains to be discovered.

—S. B. Kendall.

Reid, W. M. (1959). **Delays in establishment of flock immunity due to the use of coccidiostats.**—Poult. Sci. **38**, 1240. **2518**

This brief note states that a number of coccidiostats may interfere significantly with the acquisition of resistance to re-infection.

—S. B. Kendall.

Gardiner, J. L. (1959). **Control of experimental cecal coccidiosis with sulfaquinoxaline combinations.**—Poult. Sci. **38**, 1032-1037. **2519**

Chlortetracycline proved more satisfactory than oxytetracycline when used in combination with sulphaquinoxaline for the control of caecal coccidiosis. Chlortetracycline at 200 g. a ton, together with 0·0125% or 0·025% sulphaquinoxaline gave excellent results.—S. B. Kendall.

Erasmus, J., Levine, P. P. & Scott, M. L. (1959). **An interrelationship between coccidiosis and vitamin A nutrition of chickens**—Poult. Sci. **38**, 1202. **2520**

Coccidiosis due to a mixed infection of *E. tenella* and *E. acervulina* appeared to be evidenced by more severe disease in chickens receiving diets deficient in vitamin A. Infected chicks had lower liver storage levels of vitamin A than had uninfected chicks receiving a similar diet. It appeared that the chick's requirements of vitamin A were increased by infection with coccidia.—S. B. Kendall.

Britov, V. A. (1960). **[Economic effectiveness of haemosporidin prophylaxis of piroplasmosis in horses.]**—Veterinariya, Moscow **37**, No. 3 pp. 29-30. [In Russian.] **2521**

Near the Volga piroplasmosis occurred during May. Up to 1958 the temperature of all horses was taken twice daily during this month and horses with fever were treated for piroplasmosis. In addition all horses were dusted weekly with BHC to control ticks. Among 800 horses there were each year about 50 cases and 9 or 10 deaths. In 1958 this system was replaced by 3 prophylactic inj. of haemosporidin given to all horses at fortnightly intervals during May. Annual incidence was reduced to 3 cases, none fatal. It was no longer necessary to take temperatures.

The total cost of control measures and losses in 1958 was one-hundredth that of previous years.—R.M.

Goodwin, L. G. & Richards, W. H. G. (1960). **Pharmacologically active peptides in the blood and urine of animals infected with Babesia rodhaini and other pathogenic organisms.**—Brit. J. Pharmacol. **15**, 152-159. [Part of authors' introduction.] **2522**

Severe or fatal shock occurs in cattle infected with piroplasms, and may be brought about by treatment with effective drugs. A similar phenomenon is sometimes observed in mice infected with *B. rodhaini*. It has been suggested that the destruction of parasites by the drug liberates substances which are toxic to the host. The liberation of "toxins" from protozoal parasites has often been suggested to explain physiological disturbances in the host, but pharmacological studies of the nature of these "toxins" have been few.

The present paper describes a preliminary study of the active substances present in the blood and urine of animals infected with *B. rodhaini* and other pathogenic organisms. Pharmacologically active peptides are shown to be present.

Shmulevich, A. I. & Evplov, N. N. (1960). **[Combined chemotherapy of Theileria annulata infection in cattle.]**—Veterinariya, Moscow **37**, No. 2 pp. 20-24. [In Russian.] **2523**

The authors recommended one of the tetracycline antibiotics plus Acaprin (quinuronium sulphate) or trypaflavine (euflavine). Dosage of euflavine was 3 mg./kg. body wt. as a 1% soln. given i/v.—R.M.

Legg, J. (1959). **United Nations. Report to the Government of the Federation of Malaya on animal health problems with special reference to protozoan blood parasites.**—pp. 26. Rome: Food and Agriculture Organization of the United Nations. [FAO Report No. 1090.] **2524**

The tick-borne protozoa of Malayan cattle were *Babesia bigemina, B. argentina, Anaplasma marginale* and *Theileria mutans*. Special attention was paid to a wasting disease, associated with anaemia, which has been referred to as "R disease". L. showed that one cause was Johne's disease; other possible causes were discussed. Skin disease in calves caused by *Actinomyces dermatonomus* [*Dermatophilus congolensis*] was observed.
—R.M.

Huff, J. & Franklin, T. E. (1960). **Anaplasmosis antigen production.**—Sthwest. Vet. **13**, 133-136. **2525**

Large non-lactating cows which have not been previously subjected to antibiotic treatment are used for antigen production by the method described by Mott & Gates [*V.B.* **21**, 2563] after passing the complement-fixation test for anaplasmosis.—T.E.G.R.

Rybaltovskii, O. V. (1960). **[Seasonal incidence of sarcosporidia in slaughtered pigs].**—Veterinariya, Moscow **37**, No. 4 pp. 45-46. [In Russian.] **2526**

Sarcosporidia were found in 916 (11·8%) of 7,760 pig carcasses. The incidence was highest from December to February (16–17%) and lowest in July (3·4%).—M.G.G.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Polatnick, J. (1960). **Studies on the small particle complement-fixing antigen of foot-and-mouth disease virus.**—Proc. Soc. exp. Biol., N.Y. **103**, 27-31. [Author's summary modified.] **2527**

The so-called small particle c.f.-antigen fraction, free from infective virus particles and larger components, was prepared by centrifugation from bovine tongue epithelium infected with F. & M. disease virus type A, strain 119. The c.f. activity of this fraction was stable from pH 5·25 to 10·5, withstood heating for 30 min. at 60°C., and was resistant to proteolytic and nucleolytic enzymes. It was precipitated by dialysis and by ammonium sulphate, ethanol, and acetone. Diethyl amino ethyl cellulose and calcium phosphate columns prepared at different ionic strengths were used in chromatographic purification. The small particle c.f.-antigen displays the properties of a euglobulin and is more stable than the large infective particle with which it is associated.

Ciaccio, G. (1960). Adaptation d'une souche cobaye-souris de type C de virus aphteux au hamster (Mesocricetus auratus). **[Adaptation to hamsters of foot and mouth disease virus previously passaged in guinea-pigs and mice.]** — Ann. Inst. Pasteur **98**, 159-161. [Summary in English.] **2528**

A type C strain that had undergone 793 passages in g.pigs, followed by 126 in mice, then underwent 33 successive passages in hamsters weighing 50–130 g. The infection

was usually symptomless in adult hamsters, and no lesions were seen with the naked eye. Ten of the 47 hamsters died. Titres of 10^{-5} to 10^{-6} were obtained.—M.G.G.

Pledger, R. A. (1960). **Effect of neutral red on plaque formation by foot-and-mouth disease virus.**—Virology **10,** 50-56. [Author's summary modified.] **2529**

In primary calf-kidney tissue cultures of type A virus adsorption was complete within 20 min. at 37°C., but when 1 : 10,000 dilution of neutral red was used in the agar nutrient medium, incubation for a further 70 min. was required before titres became maximal. Decreasing the neutral red concentration decreased the incubation time necessary for maximal titres. By appropriately diminishing the concentration of this stain in an agar overlay, the same plating efficiency was obtained as when staining was withheld until after the necrotic areas had developed. It was concluded that some early stages of virus replication are subject to inhibition by neutral red through the action on the host cell, and that after this stage is past, the stain has no detectable effect on further acts of replication.

Platt, H. (1960). **The localization of lesions in experimental foot-and-mouth disease.**—Brit. J. exp. Path. **41,** 150-159. [Author's summary modified.] **2530**

After grafting to the tongue or the metatarsal pad, hairy skin becomes susceptible to F. & M. virus.

The susceptibility of epithelium from the predilection sites (tongue, prepuce and metatarsal pad) to infection with the virus is greatly reduced after grafting to the chest. It was concluded that susceptibility is related to a hyperplastic state of the epithelium and persistent local irritation and it is suggested that in regions where these conditions are present, the metabolic activities and cell surface properties of the epithelial cells may differ from elsewhere in the skin and in a way favourable to virus infection.

Hecke, F. & Uhlmann, W. (1959/60). Bericht über die Ergebnisse der Grossversuches 1957-1958 zur Wirksamkeitsprüfung der Maul-und Klauenseuche-Konzentratvakzine nach Pyl und der Originalvakzine nach Waldmann und Köbe. **[Report on a large-scale trial of two vaccines against foot and mouth disease.]**—Mh. Tierheilk. **11,** 271-283; 303-313; 327-339 & **12,** 1-11. **2531**

Local reaction to Pyl's concentrated vaccine was milder than that to vaccine prepared by the Waldmann-Köbe method. Immunity was demonstrable within a week of vaccination with either vaccine, reaching its peak around 3–4 weeks. It was still satisfactory about 3 months later. In numerous tests with concentrated vaccine, challenged with highly virulent heterologous virus, immunity was inferior to that produced by Waldmann's vaccine, when challenged with homologous virus. Otherwise the two vaccines proved about equal in value, occasional differences being mainly due to antigenic differences or virulence of virus strains. It was concluded that under similar conditions the two vaccines produced about the same immunity.—E.G.

Didovets, S. R. (1960). **[Foot and mouth disease in human beings: report of four cases.]**—Veterinariya, Moscow **37,** No. 2 pp. 16-19. [In Russian.] **2532**

The cases were as follows. (1) Veterinary technician working on an infected farm who developed vesicles on the lips and face and later on the palms of the hands. Attempts to transmit infection to a g.pig failed. (2) Milkmaid attending infected cows, who complained of headaches and lack of appetite, and nasal catarrh. 6 days later vesicles developed on the mucous membrane of lips, cheeks and tongue. Two g.pigs had plantar pads scarified with vesicle contents and one developed a superficial vesicle at the site of scarification. (3) Clerk living in an infected district with vesicles on the hard palate accompanied by oedema and salivation lasting for 9 days. On the third day of illness lesions were also seen on tongue, lips and cheeks. (4) Girl aged 6 on an infected farm with vesicles on lips, oral mucosa and nose. Infection was transmitted to the plantar pad of a g.pig. The girl had drunk fresh milk, and this was believed to be the source of infection. Two other cases were seen in town-dwellers and here the source of infection was not known.—R.M.

Ustenko , V. S. (1959). **[Disinfectants for animal buildings infected with the virus of Aujeszky's disease.]**—Trud. Vsesoyuz. Inst. vet. Sanit. **15,** 130-141 [In Russian.] **2533**

The following disinfectants were efficient when applied to brick or wooden surfaces at the rate of a litre per square metre:—3% caustic soda soln. heated to 50–60°C.; 1% formaldehyde soln.; clear bleaching powder soln. containing 3% active chlorine; 20% suspension of freshly-slaked lime; 0·1% soln.

of "RL-59" [composition not stated]. Hot or cold emulsions of 2–10% creolin were useless. —R.M.

Sharma, P. R. (1959). **A simple method to diagnose rabies by double diffusion test, Part I.**—J. vet. Res., Mhow **3**, 35-39. 2534

S. obtained positive agar gel precipitation, on glass slides and in tubes and plates, by testing brain of rabid animals against anti-rabic serum, and also with serum from clinically affected animals and known infected brain or vaccine.—R. N. MOHAN.

Emanuiloff, I. (1959). **Contribution to laboratory diagnosis of horse rabies.**—C. R. Acad. bulg. Sci. **12**, 349-351. [In English. Summary in Russian.] 2535

Details were given of a differential staining technique for Negri bodies in brain material from horses, using a stain first described by Gerlach in 1917. It consists of 3 parts of Ziehl Neelsen carbol fuchsin, 6 parts of methylene blue in alcohol and 100 ml. of a 1 : 10,000 soln. of potassium hydroxide in distilled water. By this method ganglion cells are stained blue and Negri bodies red to purple.—E.G.

Huygelen, C. & Mortelmans, J. (1959). Pouvoir rabicide du sérum des ruminants après vaccination au moyen du virus Flury H. E. P. **[Virus neutralizing antibodies in cattle and sheep inoculated with the Flury strain of rabies virus.]**—Bull. Soc. Pat. exot. **52**, 747-751. 2536

After i/m inoculation of 11 cattle and 5 sheep with 2 ml. of suspension of Flury rabies virus of 187 passages, 6 cattle developed neutralizing antibodies, the titre of which was increased by a booster dose given a month later. The sheep remained negative.—M.G.G.

Levenberg, I. G. (1959). **[The microflora of vesicles in experimental sheep pox.]**—Trudy Vsesoyuz. Inst. vet. Sanit. i Ektoparasit. **14**, 76-77. [In Russian.] 2537

Staphylococci were isolated from the vesicles of 15 sheep with experimental sheep pox.—M.G.G.

Nilakartan, P. R., Sengupta, B. R. & Sakkubai, P. (1960). **Observations on the use of freeze dried fowlpox vaccine.**—Indian vet. J. **37**, 1-6. 2538

In 5-week-old chicks satisfactory immunity was established 15 days after inoculation with freeze-dried egg-adapted fowl pox virus. Lesions were not generalized, and infection did not spread to in-contact chicks. The virus in the freeze-dried material remained at fairly high levels on storage.—R. N. MOHAN.

Villa, L. J., Blind, C. & Muñiz Vega, B. E. (1959). Aislamiento de virus de encefalomielitis equina. (Tipo Venezuela.) **[Isolation of Venezuelan equine encephalomyelitis virus in Argentina.]**—Rev. Invest. Ganad. No. 6 pp. 121-122. 2539

Infection of horses in Argentina has hitherto been caused by the Eastern type of virus. The Venezuelan type was isolated in 1958 from one horse.—R.M.

Reháček, J. (1960). **Experimental hibernation of the tick-borne encephalitis virus in engorged larvae of the tick Ixodes ricinus L.**—Acta virologica, Prague **4**, 106-109. [In English. Author's summary modified.] 2540

Tick-borne encephalitis virus survived in engorged larvae of *I. ricinus* for 102 days of hibernation. The virus was recovered by mouse inoculation of suspensions of engorged larvae prepared 6 days and 57 to 88 days after hibernation. Virus was also recovered by the bite of nymphs moulted from the larvae.

Radomiński, W. (1960). Wpły w kortyzonu na doświadczalne zakażenie gołębi i królików wirusem niedokrwistości zakaznej koni. **[Effect of cortisone on experimental infection of pigeons and rabbits with the virus of equine infectous anaemia.]**—Med. Wet., Warszawa **16**, 8-10. [In Polish. Summaries in English and Russian.] 2541

15 and 10 mg. doses of cortisone administered i/m to rabbits and pigeons, before, during and after experimental infection with the virus had no appreciable effect and these animals appeared to be completely resistant to the virus.—M. GITTER.

Brooks, O. H., Newton, L. G. & Ludford, C. G. (1959). **A viral disease of horses in Queensland. [Discussion on paper presented in Brisbane in May.]**—Aust. vet. J. **35**, 334-336. 2542

For the paper under discussion see *V.B.* **29**, 3823. L. N. Loomis opened the discussion by comparing the subacute form of the disease with equine viral rhinopneumonitis (equine influenza and equine virus abortion). The chronic form, he thought, suggested equine infectious anaemia (EIA). African horse-sickness was a possibility, but in that case, an epizootic disease with lung oedema, thoracic transudates and high mortality would have

Medda, A. & Iadevaia, R. (1960). Nuova tecnica per un più sicuro accertamento della presenza di Echinococcus granulosus Batsch, 1786, nell'intestino di Canis familiaris. **[Technique for the post-mortem demonstration of Echinococcus granulosus in the alimentary tract of dogs.]**—Vet. ital. **11**, 15-23. [Summaries in English, French and German.] **2607**

The method of collection and preservation of parts of intestine is described and a detailed account is given of the procedure for the sedimentation of the parasites. The method, it is claimed, eliminates all risk of infestation of workers; facilitates the collection of material from distant localities; makes it possible to examine, at leisure and under ideal conditions, considerable numbers of specimens; reveals a higher number of positive cases; makes it possible to extend epidemiological survey to any species, including wild animals.—T.E.G.R.

Ciordia, H. & Bizzell, W. E. (1960). **Some effects of X-ray on the infective larvae of the cattle nematode Trichostrongylus axei.**—Exp. Parasit. **9**, 37-41. [Authors' summary modified.] **2608**

Doses of up to 90,000 r failed to inhibit the motility of the infective larvae maintained in tap water at room temperature for 28 days.

Irradiation of about 5,000 r apparently stimulated the infective power of the larvae without noticeable increase in their pathogenicity.

Above 10,000 r, fewer adult nematodes were present in the stomachs of infected rabbits.

There was a gradual reduction in the proportion of male to female parasites recovered as the dose increased above 5,000 r. No male worms were recovered from rabbits that received larvae exposed to 60,000 r. No worms were recovered from rabbits given larvae exposed to 90,000 r.

Rohrbacher, G. H., Jr. (1960). **The effect of green feed and ascorbic acid upon single experimental infections of Trichostrongylus axei (Cobbold, 1879) in the laboratory rabbit.**—Amer. J. vet. Res. **21**, 138-143. **2609**

Rabbits were maintained on rations of kudzu, Johnson grass, fescue and standard pellet ration supplemented with lucerne or with ascorbic acid. At P.M. examination 17 to 30 days after a single dose of 6,000 or 10,000 infective larvae of *T. axei*, rabbits of the groups receiving the standard pellet ration harboured the same number of worms as the rabbits in the other groups. It was noteworthy however, that rabbits fed kudzu, Johnson grass or pellets supplemented with lucerne or ascorbic acid harboured significantly more immature worms than those fed the standard ration. Some rabbits fed fescue or Johnson grass died of malnutrition during the experiment, losses occurring both in the infected and control groups. The poor diets did not enhance the effects of nematode infection as shown by weight gains or pathological changes. This is in contrast to the findings of others working with *T. axei* infection in sheep and cattle, and it is suggested that these differences may result from the use of multiple infections by these other workers.

—T. E. Gibson.

Gibson, T. E. (1960). **Controlled tests with four new anthelmintic substances against Trichostrongylus axei in sheep.**—Vet. Rec. **72**, 343-344. **2610**

Bephenium embonate given by mouth at 250 mg./kg. body wt. removed an average of 56% of *T. axei* from lambs while bephenium hydroxynaphthoate removed 74% at the same dosage. Oral administration of ronnel ("Trolene") at 110 mg./kg. or Dipterex ("Neguvon") at 100 mg./kg. had no action on the worms.—R.M.

Banks, A. W. & Mitton, R. L. (1960). **Acute Ostertagia ostertagi infection in young cattle and its successful treatment with O, O-dimethyl 2,2,2-trichloro 1-hydroxymethyl phosphonate.**—Vet. Rec. **72**, 241-244 & 245. [Authors' summary modified.] **2611**

"Neguvon" was effective in severe *Ostertagia ostertagi* infection in calves from 1 to 11 months of age, on pasture. Dose rates of 80 mg. per kg. or above gave excellent clinical results, but 69 mg. per kg. was too low.

Alarming symptoms were common soon after dosing but usually passed off in a short time. These were rapidly reversed by atropine sulphate (8 mg. by slow i/v inj.), except in one anomalous fatal case. This antidotal treatment did not affect the anthelmintic value of "Neguvon".

Clinical and P.M. appearances are described.

It was estimated that the minimum number of *O. ostertagi* for serious disease in a calf 6 to 9 months old was from 50,000 to 80,000, and in a month-old calf, from 10,000 to 12,000. *Cooperia oncophora* appeared to be less pathogenic.

The affected calves had been born during an abnormally dry season.

Successful treatment did not appear to decrease resistance to re-infection.

Silverman, P. H. & Patterson, J. E. (1960). **Histotrophic (parasitic) stages of Haemonchus contortus.**—Nature, Lond. **185,** 54-55. 2612

H. contortus developed more rapidly in susceptible lambs, than in susceptible yearling sheep. In resistant yearlings the majority of worms failed to develop beyond the 4th and 5th larval stages which were thrown off 10 to 15 days after infection.

There was no host tissue response in the abomasal mucosa to the histotropic larvae. Damage was caused by immature adults burrowing in the mucosa.

4th and 5th stage larvae had greater antigenic activity in serum than exsheathed 3rd stage or young adult worms. Fresh and formalin treated 4th and 5th stage larvae, injected into sheep, produced a greater degree of protection than did 3rd stage larvae.

These observations indicate that the histotropic stages of *H. contortus* are important sources of antigen, and appear to be the antibody-susceptible stages.—J. Rose.

Kates, K. C. & Turner, J. H. (1960). **An experiment on the combined pathogenic effects of Haemonchus contortus and Nematodirus spathiger on lambs.**—Proc. helm. Soc. Wash. **27,** 62-67. [Authors' summary modified.] 2613

Of the 8 clean lambs used, two were infected with both species of nematodes, two with *H. contortus* only, and 4 were controls. Observations during 10 weeks showed that the combined effects of these two parasitic nematodes were additive, and that the characteristic symptoms of haemonchosis and nematodirus disease were accentuated.

Lynch, J. E. & Nelson, B. (1959). **Preliminary anthelmintic studies: Nematospiroides dubius in mice.**—J. Parasit. **45,** 659-662. [Authors' summary modified.] 2614

The therapeutic activity of Compound 1871 (2-thienylmethyl 2-imidazolinyl sulphide hydrochloride) a new anthelmintic, has been evaluated against *N. dubius* infection in mice. Doses as low as 12·5 mg./kg. were capable of eliminating the infection. Established anthelmintics were less active.

Rukavina, J., Delić, S., Čanković, M. & Markotić, B. (1960). Primjena dictina u terapiji diktiokauloze ovaca. [**Cyanacethydrazide for sheep lungworms.**]—Veterinaria, Sarajevo **9,** 81-87. [In Croat.] 2615

A cyanacethydrazide preparation ("Dictin") was tested in 300 lambs heavily infested with *Dictyocaulus filaria* and found very satisfactory. Simultaneous treatment with phenothiazine for the control of intestinal strongylosis was advocated.—E.G.

Supperer, R. & Pfeiffer, H. (1960). Untersuchungen über die Wirkung von Hygromycin B auf Darmparasiten des Schweines. [**Effect of hygromycin B on intestinal parasites in pigs.**]—Wein. tierärztl. Mschr. **47,** 165-172. [Summaries in English, French and Italian.] 2616

Hygromycin B was effective against *Oesophagostomum* spp. and *Ascaris lumbricoides,* but not against *Strongyloides suis, Trichuris trichiura* or lungworms.—E.V.L.

Siegmann, O. (1959). Wirkung und Anwendung von Hygromycin B bei der Bekämpfung von Geflügelhelminthen. [**Hygromycin B as an anthelmintic for poultry.**]—Berl. Münch. tierärztl. Wschr. **72,** 467-469. [Summary in English.] 2617

Hygromycin B, fed over eight weeks to 400 fowls in doses of 0·5%/kg. feed, twice the effective dose, expelled *Ascaridia galli* and *Heterakis gallinae.* Helminth ova excreted after commencement of treatment failed to develop into mature worms. Young chicks tolerated doses of up to 0·5%/kg. feed well, higher doses resulted in slight depression of growth. Helminths other than ascaridia and heterakis did not appear to be affected.—E.G.

Frazier, M. N. (1959). **Field trials with hygromycin as an anthelmintic in poultry.**—Avian Diseases **3,** 478-484. [Abst. from author's summary.] 2618

The results of these trials indicated that hygromycin may have a place in the control of *Ascaridia galli, Capillaria obsignata,* and *Heterakis gallinae* in fowls.

Knapp, S. E., Hansen, M. F., Moser, H. C. & McFarland, R. H. (1960). **Uptake of sulfur-35-labeled carbon disulfide by Ascaridia galli (roundworm) and its chicken host.**—Exp. Parasit. **9, 56-62.** [Authors' summary modified.] 2619

Labelled carbon disulphide was taken up by the worm as a vapour, and entered through the cuticle. After oral administration of a therapeutic dose radiosulphur was present in 22 tissues and organs of fowls 48 hours afterwards. The highest concentration of S^{35} was

ville revealed that the disease had occurred at least as far back as 1951.

The disease was encountered in several parts of the country, under various systems of management and at almost all times of the year. Both lambs and adults were affected, the majority being between 18 months and 2 years of age.

Clinically, two forms were recognized: mild [*V.B.* **28,** 3358] with morbidity and low mortality, and severe with morbidity rarely higher than 5% but mortality almost 100%. The main clin. feature of the mild form was partial or complete blindness. In the severe form symptoms varied from aimless wandering, dejection and blindness to lateral recumbency with nystagmus, marked opisthotonos and intermittent clonic spasms. Several animals showed hyperexcitability on handling.

In both forms lesions were confined to the brain. In almost all severe cases they were visible to the naked eye as characteristic areas of yellowish discoloration disseminated throughout the cerebral cortex of both hemispheres. Histologically, necrosis of grey matter was a constant finding in the cerebral cortex, less frequent in other parts of the brain.

The disease is considered to be very similar to polio-encephalomalacia in sheep described by Jensen *et al.* in the U.S.A. [*V.B.* **27,** 907]. The entity is also briefly discussed in relation to pathologically similar entities in other species.

The cause of the disease has not been elucidated; it is thought, however, that it may be associated with enterotoxin.—S. Terlecki.

I. László, S., Mestyan, A., Prettenhoffer, Z., Szabó, J. & Varju, L. (1960). A sertéspestis lapinizált vírusával való védöoltás bevezetése az egyik nagy sertéshízlaló telepen. **[Vaccination against swine fever with lapinized virus.]**—Mag. állator. Lapja **15,** 21-24. [In Hungarian. Summaries in English and Russian.] **2553**

II. Debreczeni, I. (1960). Nagyüzemi tapasztalatok a lapinizált sertéspestis-vírussal. **[Vaccination against swine fever with lapinized virus.]**—Ibid. 24-27. [In Hungarian. Summaries in English and Russian.] **2554**

III. Domán, I. (1960). A lapinizált sertéspestisvírus-vakcinával szerzett tapasztalatok a gyakorlatban. **[Vaccination against swine fever with lapinized virus.]**—Ibid. 27-30. [In Hungarian. Summaries in English and Russian.] **2555**

Three accounts are given of the field use of lapinized swine fever vaccine for the control of swine fever (s.f.). In all cases 2 ml. vaccine (l.v.) was used with varying doses of mixed swine fever-erysipelas serum (hereinafter serum) simultaneously.

I. At a fattening plant—where s.f. was endemic despite adequate preventive measures and routine vaccination by the old simultaneous method—from April 1957 all newcomers to the herd were inoculated within 48 hours of arrival with l.v. and with 0·5 ml./kg. of serum. During the remainder of the year 85,551 pigs were vaccinated by this method and no further cases were seen after September.

Side reactions were observed only in a few animals, consisting of loss of appetite, usually lasting from the 10th to the 15th day, but in a very few cases persisting and leading to loss of condition. In 96 pigs vaccination without the use of serum was tried; 7 of them developed s.f. and had to be slaughtered. In a batch of 600 pigs which were affected by a variety of diseases 7 cases of s.f. were observed after vaccination. In a batch of 499 pigs, in which several s.f. cases had occurred, the disease disappeared a week after vaccination. In a batch of 580 pigs, 27 cases of s.f. occurred after vaccination: in some cases the old lapinized vaccine, prepared with egg colloid, had been accidentally used in this batch. Some 600 pigs were immunized 23 days before transportation to the plant; on arrival several cases of s.f. occurred amongst them, presumably due to breakdown from the stress of transport.

II. On a state farm 886 Hungarian pigs, weighing 18–70 kg., and 658 Mangalitsa pigs, weighing 20–77 kg., were immunized with l.v. and 0·25–0·55 ml./kg. serum. Of the Hungarian pigs, 48 (most of which had received smaller doses of the serum) showed a watery diarrhoea, starting around the 5th day and subsiding after 2 weeks, and 27 pigs had an elevated temperature persisting at least 3 days. Of the Mangalitsa pigs 17 had diarrhoea and 1 had elevated temperature. 10 untreated 3-month-old control pigs remained healthy after contact with their vaccinated mates. In 18 pregnant sows, also vaccinated, no abortions or side effects were observed. Though s.f. occurred on the neighbouring farms from time to time, no cases were seen on this farm after vaccination with l.v.

III. The author gives an account of the overall satisfactory effect of vaccination with l.v. and doses of serum varying from a total of 15 ml. to 2 ml./kg. body wt. carried out in

40,000 pigs during outbreaks of s.f. Two breakdown cases are described in detail: (1) of 231 pigs 31 died of s.f. as a result of failure to recognize recently introduced s.f. infection and consequently only administering the lowest limit of the serum doses, 15–20 ml./pig, which would normally have been used for uninfected stock; (2) a whole group of 17 vaccinated pigs died for which no explanation could be given.

Use of 2 ml. l.v. simultaneously with 0·3–0·5 ml./kg. serum for uninfected stock, with 0·6–0·8 ml./kg. for stock exposed to infection or suspected of being infected, and with 1–1·5 ml./kg. in infected, diseased or pregnant animals seemed to be of great value. For pigs of the Mangalitsa breed the lower, for pigs of the Hungarian bacon type the higher, ranges of the above doses were necessary to counteract the side effects of the vaccine.—A. Sebesteny.

Reuss, U. & Glässer, H., Jr. (1960). Experimentelle Untersuchungen über die Beeinflussung der Schweinepest durch Aureomycinfütterung. **[Influence of dietary chlortetracycline on swine fever.]**—Mh. Tierheilk. **12,** 26-33. **2556**

169 pigs given chlortetracycline in the food both before and after infection with swine fever virus lived 1–3 days longer than 118 untreated controls. This effect was consistent during 28 passages of the virus in treated pigs and was ascribed to the inhibition of secondary invaders from the intestine.

—M.G.G.

Bakos, K., Obel, A-L., Swahn, O. & Walzl, H. (1960). "Inclusion-body-Rhinitis" bei Ferkeln mit experimenteller Enzootischer Pneumonie. **[Inclusion-body rhinitis in piglets with virus pneumonia.]**—Zbl. VetMed. **7,** 262-272. [Summaries in English, French and Spanish.] **2557**

Healthy 5-day-old piglets were infected with the Sanda strain of porcine pneumonia virus isolated in Sweden [*V.B.* **23,** 1540], 15 of them intranasally and 5 by contact. All developed catarrhal rhinitis and pneumonia. In 5 animals killed between 12 and 37 days after infection there were intranuclear inclusions in the nasal mucosa like those described by Done. In three others killed 48, 50 and 70 days after infection there was atrophy of the ventral turbinate bones. When older pigs were infected with the virus they failed to develop rhinitis. The experiments confirmed Radtke's observations [*V.B.* **9,** p.874] that nasal secretion from pigs with rhinitis caused pneumonia and that lung suspensions from pneumonia cases caused rhinitis.—R.M.

Peterson, W. D., Jr. (1960). **A study in vitro of components in the transmission cycle of swine influenza virus.**—Fed. Proc. **19,** No. 1 Part 1 p. 409. [Author's abst. modified.] **2558**

Pig lungs, lungworms, and earthworms were maintained *in vitro*. Swine influenza virus was added to each. Virus multiplied readily in cultures of lung. Virus was adsorbed to lungworms, and could be recovered for prolonged periods of time, but no increase of virus in lungworms or medium was detected. Neither multiplication nor survival of virus was observed in earthworms, or in cultures of minced earthworms. Inhibitors of viral haemagglutination were found in extracts of lung, bronchial secretions, serum, and lungworms, but not in extracts of earthworms. The demonstration that virus adsorbs to lungworms, and that receptor-like substances are present in lungworm extracts might be considered to support the thesis that lungworms may play a role in the transmission of swine influenza virus, but on the other hand, interaction between virus and earthworms was not observed.

Rockborn, G. (1960). **A preliminary report on efforts to produce a living distemper vaccine in tissue culture.**—J. Small Anim. Pract. **1,** 53-55. [Author's summary modified.] **2559**

A field strain of distemper virus serially passaged in dog kidney tissue culture afforded protection against virus strains of high virulence. After i/p infection of ferrets or i/m infection of dogs the attenuated virus did not spread to animals kept in the same room or even to cage mates. The fact that the virus titre obtainable in tissue culture is about 100 times higher than that in eggs suggests that tissue culture virus, if used as a vaccine, might have a better keeping quality than the egg-adapted strains.

Brueckner, A. H., Gonlag, H., Schroeder, J. P., Gauker, F. B. & Johnston, R. V. (1959). **Development of a combined vaccine for canine hepatitis and leptospirosis—Virogen DHL.**—Allied Vet. 30, 100-104 & 109. **2560**

Virogen DHL is a new combined vaccine containing the antigens of inactivated distemper and hepatitis viruses, *Leptospira canicola* and some of the important secondary invaders: streptococci, salmonella, brucella. Extensive tests with litter mates were done

and tabulated, the distemper challenge being carried out with Snyder Hill strain. Sterility, safety and stability of the combination were all checked and the conclusion drawn that three 5-ml. doses at 2–3 week intervals were most effective, though for leptospiral protection alone, two doses would suffice.

—Irene M. Grisedale.

Czarnowski, A. (1960). Zakaźne zapalenie watroby u lisów hodowlanych na ferenie województwa gdańskiego. **[Infectious hepatitis in foxes.]**—Med. Wet, Warszawa **16,** 14-16. [In Polish. Summaries in English and Russian.] **2561**

C. diagnosed infectious hepatitis (Rubarth's disease) in 226 out of 1,209 fox carcasses examined in 1957 and 1958. The clinical symptoms were excitement, hyperaesthesia, incoordination, clonic convulsions and in some cases sudden death. P.M. examination usually revealed septicaemia with ecchymoses on serous and mucous membranes, especially in the small intestine, urinary bladder, abdominal muscles, diaphragm and thymus in young animals, congestion and slight swelling of liver and kidneys. Bacteriological examination usually proved negative and from fresh carcasses of some animals the virus was isolated. 159 of 796 blood samples from foxes from 27 breeding centres gave positive reactions to the c.f. test.—M. Gitter.

Kohlhage, H. (1960). Experimentelle Untersuchungen über das Virus der infektiösen Myxomatose der Kaninchen. II. Mitteilung: Das Verhalten des Myxomvirus Stamm "Frankfurt 1" auf der Eimembran und in der Zellkultur von Kaninchen-Niere; mit Versuchen zum Nachweis eines Hämagglutinins. **[Studies on myxomatosis virus. II. Behaviour in egg membrane and rabbit kidney cell culture, and a search for haemagglutinins.]**—Mh. Tierheilk. **12,** 48-67. **2562**

Myxoma virus caused specific lesions on egg membrane and reached its maximum titre on the third day. From the fifth day the titre decreased rapidly and the lesions disappeared. On rabbit skin titres were 230-fold higher than on egg membrane. The virus was not cytopathic in cultures of trypsinized rabbit kidney cells, and the titre attained was only 30% of that on rabbit skin. No haemagglutinin was found with erythrocytes from 8 species of animals.—M.G.G.

Barski, G. & Cornefert, F. (1960). Mise en évidence, en cultures de la souche cellulaire HeLa, de l'infection ectromélique latente chez la souris. **[Diagnosis of latent ectromelia in mice by the use of tissue culture.]**—Ann. Inst. Pasteur **98,** 112-118. [Summary in English.] **2563**

Ectromelia virus was demonstrated in mice with no clinical or histological signs of infection by specific changes in HeLa cell cultures inoculated with liver and spleen cells from the mice. The virus underwent 7 passages in HeLa cell cultures.—M.G.G.

Mims, C. A. (1959). **The response of mice to large intravenous injections of ectromelia virus. I. The fate of injected virus. II. The growth of virus in the liver.**—Brit. J. exp. Path. **40,** 533-542 & 543-550. [Author's summaries modified.] **2564**

I. Ectromelia virus is virtually all cleared from the blood of mice within a few minutes of a massive intravenous injection, and is taken up by the littoral cells lining the liver sinusoids.

However much virus is injected, none reaches hepatic cells.

During the first hour after injection there is a great decrease in the amount of demonstrable antigen in littoral cells, as shown by fluorescence microscopy, and in the amount of infective virus.

It is thought that i/v injected virus particles are dealt with in the same way as i/v injected inert particles.

A small proportion of the injected virus becomes associated with circulating platelets and perhaps leucocytes, so that it cannot be removed from the blood by littoral liver cells.

There is unimpaired clearance of i/v injected virus until a late stage in infection.

II. When mice die after massive i/v inj. of ectromelia virus, nearly all the virus is present in the liver. Only a very small proportion appears in the blood, bile, or hepatic lymph nodes.

Growth in the liver after massive i/v inj. of virus has been analysed by the fluorescent antibody technique. There is an initial growth cycle in some of the littoral cells, which then infect neighbouring hepatic cells. These in turn infect more hepatic cells after each cycle of growth. When, 26–30 hours later, there have been at least three step-like increases in the size of the infected foci, there are almost no uninfected liver cells, and mice die.

Degenerative cell fragments appear in the

peripheral circulation at the time of sickness. Hepatic cells are not infected except by littoral cells.

Mims, C. A. (1960). **Intracerebral injections and the growth of viruses in the mouse brain.**—Brit. J. exp. Path. **41,** 52-59. [Author's summary modified.] **2565**

Very high pressures are needed to inject mice intracerebrally (i/c), and large volumes are usually injected. Some of the injected material is deposited in the c.s.f. spaces in the brain, but the high injection pressure breaks down the c.s.f.-blood barrier, so that the rest spills over into the blood.

The fluorescent antibody technique has been used to identify the cells in the mouse brain which support the growth of certain i/c injected viruses.

Ectromelia and rabbit pox viruses grew in the cells lining the c.s.f. spaces to produce meningitis and ependymitis. There was little or no growth in the brain parenchyma.

I/c injected Murray Valley encephalitis virus grows in neurones or neuroglia, and not in cells lining the c.s.f. spaces. Its passage across the c.s.f.-brain barrier was investigated.

Rott, R. & Schäfer, W. (1960). Physikalisch-chemische und biologische Eigenschaften des Virus N und seine Beziehungen zur Influenza A-Untergruppe der Myxoviren. **[Physical, chemical and biological properties of virus N and its relationship to the myxoviruses.]**—Zbl. VetMed. **7,** 237-248. [Summaries in English, French and Spanish.] **2566**

The "virus N" isolated from fowls by Dinter in 1949 was believed to be a variant of fowl plague virus [*V.B.* **20,** 1966; **25,** 3663]. It was compared with classical fowl plague virus and 4 strains of the influenza A virus in a series of tests which included electron microscopy, ultracentrifuge analysis, and haemagglutination. The authors concluded that virus N belonged to the sub-group influenza A of the myxovirus group.—R.M.

Rao, S. B. V. & Agarwal, K. K. (1960). **Studies in the immunization of day old chicks with (U.K.) Newcastle disease F.1 strain of virus against (Asiatic) Mukteswar strain of Newcastle disease, Part I.**—Indian vet. J. **37,** 6-14. **2567**

Following intranasal instillation of the freeze-dried F 1 strain, but not its injection into the wing web, the HI titres in day-old chicks from immune fowls rose significantly in 7 days, but protection against challenge with virulent virus was established in 48 hours. This early protection was explained as the effect of interference, which was also observed in the changed mortality pattern in chick embryos inoculated with the less lethal F 1 strain 24 and 48 hours before inoculation with the virulent virus.—R. N. Mohan.

Baczyński, Z. (1960). Nosicielstwo i siewstwo wirusa rzekomego pomoru drobiu (Newcastle disease). II. Ptaki wolno żyjące. **[Dissemination of Newcastle disease. II. Role of wild birds.]**—Med. Wet., Warszawa **16,** 17-18. [In Polish. Summaries in English and Russian.] **2568**

After 24 hours' fasting, 8 pigeons, 12 rooks, 30 sparrows and 13 jackdaws were given food infected with Newcastle disease virus. Their droppings were examined daily for 5 days and the haemagglutination inhibition (HI) test was carried out between the 7th and 11th day. The virus could not be found in the droppings of pigeons, rooks and sparrows and the HI test in these birds also gave negative results. The virus was however isolated from the droppings, but not from the intestinal wall, of jackdaws from 1–4 days after infection and the HI titres ranged from 1 : 512 to 1 : 2,048. B. considers that jackdaws could become carriers of Newcastle disease and further work was needed to determine whether they are active or passive carriers.

—M. Gitter.

Baetjer, A. M., Lowry, R. H. & Bang, F. B. (1960). **Effects of environmental temperature and humidity on spread of virus in the respiratory tract.**—Fed. Proc. **19,** No. 1 Part 1 p. 178. [Authors' abst. modified.] **2569**

Four-day-old chicks were kept at 84° and 72°F. (the highest and lowest temperatures for survival) with 20 and 90% relative humidity following intranasal inoculation with Newcastle disease virus. They were killed 4–8 days later, and the nares, trachea and lungs assayed for virus. Ciliary activity and tissue temperature were measured in infected and control animals. Histological sections of the respiratory tract were made. When humidity was high (90%), the spread of virus to the trachea and lungs was greater at 72° than at 84°F. In a warm environment (84°F.) the virus spread to the trachea and lungs to a greater extent, the rate of ciliary transfer of a colloidal dye upward in the trachea was slower, and the tissue temperature of the oropharynx and upper trachea was higher when the humidity was 20% than when it was

90%. Microscopic examination indicated that changes which accompanied the spread of virus at the low humidity were slight. Thus the inhalation of warm dry air appeared to inhibit the ciliary mechanism which allowed a greater spread of viral infection in the respiratory tract.

Schoop, G. & Wachendörfer, G. (1960). Virusspezifische Präzipitation im Agar-Diffusionsverfahren bei der Newcastle-Krankheit der Hühner. **[Virus-specific precipitation in the agar diffusion test for Newcastle disease.]**—Mh. Tierheilk. **12,** 11-26. **2570**

With the agar diffusion method precipitins were demonstrated in the serum of 2 of 9 fowls infected naturally with Newcastle disease, 5 of 13 hyperimmunized fowls, 2 rabbits inoculated i/v with the virus, but not in 22 vaccinated fowls. The degree of precipitation did not correspond with the haemagglutination titre. There was no cross reaction with fowl plague, mumps and influenza viruses. The test was not positive for organ extracts from infected fowls.—M.G.G.

Matewa, V. (1960). Vergleichende Versuche der Isolierung von Newcastle-Virus auf Gewebekulturen von Hühnerembryonen und bebrüteten Hühnereiern. **[Comparison of tissue cultures and embryonated eggs for isolation of Newcastle disease virus.]**—Zbl. Bakt. I. (Orig.) **178,** 8-14. [Summaries in English, French, Spanish and Russian. English summary modified.] **2571**

Brain or heart-blood from 152 fowls submitted for diagnosis were tested.

In 89 cases both procedures yielded positive, in 47 cases negative results. In 8 cases the positive result was obtained only in chick embryo tissue cultures, in another 8 cases only in eggs. By the haemadsorption test of Vogel & Shelokov (1957), using tissue culture fluid harvested up to 48 hours after infection, the virus was found in each case and identification was more reliable than in all other previously used methods.

Russeff, C. (1960). Virulenzabschwächung des Pseudogeflügelpestvirus in Gewebekulturen. **[Attenuation of Newcastle disease virus in tissue culture.]**—Zbl. Bakt. I. (Orig.) **178,** 1-8. [Summaries in English, French, Spanish and Russian. English summary modified.] **2572**

Two virulent Bulgarian strains of N.D.V. became attenuated when passaged in tissue cultures of chick embryo cells or cells of naturally resistant hosts. They became nearly non-pathogenic to chicks. The $I.D._{50}$ dropped from log. 8·3 to log. 4·88. The strain "Petleschkov" was more attenuated after 29 passages than the virulent strain "Burgas" after 58 passages. No correlation could be established between loss of virulence of the strains tested and the number of serial passages on the one hand, and the type of tissue cells on the other hand.

The strain tested could be adapted to bovine kidney cells after a few passages without difficulty. The advantages of vaccines produced from virus cultured in bovine kidney cells are discussed.

Asdell, M. K. & Hanson, R. P. (1960). **Sequential changes in the titer of Newcastle disease virus in tissues—a measure of the defense mechanism of the chicken.**—Amer. J. vet. Res. **21,** 128-132. [Authors' summary modified.] **2573**

Newcastle disease virus, when introduced into susceptible fowls, rapidly spread from the site of inoculation and could be detected in almost all tissues from 14 sites in the body within 48 hours and in all the tissues within 72 hours.

Virus titres for eight tissues were obtained at six-hour intervals. The increase in virus titre of the invaded tissues was usually interrupted at about the 36th hour, for 12 to 24 hours. After the period of interruption, invasion of the central nervous system occurred and signs of disease became evident.

Injection of hydrocortisone usually eliminated the period of interruption and shortened the period between inj. and appearance of clinical signs and eventual death.

The temporary interruption of the increase of virus titre in the tissues of infected chickens may be the result of a partially successful adaptation response of the host to the introduction of a foreign protein.

Nitzschke, E. & Schmittdiel, E., (1960). Über die Unterscheidung und Charakterisierung von Virusstämmen der Newcastle-Krankheit. **[Differentiation and properties of Newcastle disease virus strains.]** — Berl. Münch. tierärztl. Wschr. **73,** 148-150. [Summary in English.] **2574**

Sixteen field strains and 4 vaccine strains were compared in respect of their pathogenicity for day-old chicks, chick embryos and (intracerebrally) for mice.—R.M.

Meens, H. C. M. & van Lipzig, J. H. H. (1960). Infectieuze synovitis bij kuikens.

[Infectious synovitis in broiler fowls in the Netherlands.]—Tijdschr. Diergeneesk. **85,** 66-78. [In Dutch. Summaries in English, French and German.] **2575**

The disease was first noticed in October 1959 and since then it has occurred on 10 farms. The chickens were affected at the age of about 10 weeks. It was reproduced by inoculating birds with bacteria-free synovial exudate. Among the 15,000 birds on the 10 farms incidence varied from a few in every hundred to half the flock. Among 11,000 birds 1,300 died and 1,500 were graded as poor quality at slaughter. There are two colour plates of affected carcasses.—R.M.

Wallbank, A. M., Beard, D. & Beard, J. W. (1959). **Virus of avian myeloblastosis XIII. Antibody and immune response of the chicken to formolized virus and to active virus.**—J. nat. Cancer Inst. **23,** 251-259. **2576**

Formolized avian myeloblastosis virus produced variable but generally low antibody titres in fowls, which increased suddenly following challenge with live virus. Young chicks vaccinated intraperitoneally with formolized virus concentrate remained susceptible to immunologically related erythroblastosis virus. —E.G.

Prokof'eva, M. T. & Doroshko, I N. (1960). **[Duck virus hepatitis in the U.S.S.R.]**—Veterinariya, Moscow **37,** No. 3 pp. 38-40. [In Russian.] **2577**

Three outbreaks of duck virus hepatitis were reported in the Belgorod, Kharkov and Poltava oblasts in 1958 and 1959. The filtrable agent was passaged in ducks by intranasal and intramuscular injection and underwent 3 passages in chick embryos. The embryos of the first and second passages of one strain were alive 5 days after infection, whereas half of those of the third passage died. Changes in the liver of the ducks and chick embryos were described.—M.G.G.

Komarov, A. & Kalmar, E. (1960). **A hitherto undescribed disease — turkey meningoencephalitis.** — Vet. Rec. **72,** 257-261. [Authors' summary modified.] **2578**

A disease of turkeys in Israel was characterized by progressive paralysis associated with non-purulent meningo-encephalitis. The causative agent was a filtrable virus, cultivable in chick embryos. Chickens, ducks, pigeons, hamsters, and g.pigs were resistant, while turkeys and mice were highly susceptible to the virus. Turkeys which recovered were immune. After serial passage in embryonated eggs, a modification in pathogenicity for both turkeys and mice was noted. The modified virus retained antigenicity. An arthropod vector might be involved in transmission. Mice immune to turkey virus were fully susceptible to representative members of group A and B arthropod-borne encephalitis viruses.

It is suggested that the disease is caused by a hitherto undescribed virus.

Furesz, J. (1960). **The antibody response of roosters to poliomyelitis virus.**—J. Immunol. **84,** 251-257. [Author's summary modified.] **2579**

Six- to twelve-month-old cockerels showed an excellent antibody response to injection of infective or inactivated preparations of the three types of poliovirus. Preliminary results suggest that cockerels may be used instead of monkeys in the laboratory control of the antigenic potency of Salk vaccine.

Balducci, D., Andreoni, G., Gori, G. B., Castelli, L. & Mancini, G. (1960). **Cytopathic index: a new method for the quantitative evaluation of tissue culture infectivity of different virus strains.**—J. Bact. **79,** 379-383. [Authors' summary modified.] **2580**

This method for the quantitative evaluation of tissue culture infectivity of virus strains takes into account the rate at which the tissue culture infective dose increases with time during the test. A cytopathic index may be calculated for each of various virus strain-cell combinations, involving determination of regression coefficients which estimate the rate of development of the tissue culture infective dose ($TCID_{50}$), and adjustment of the $TCID_{50}$ by a factor based on the infectivity of the same virus in a reference tissue culture (rhesus monkey kidney).

The propagation of several strains of poliovirus and adenovirus in different types of human and animal cells was studied and cytopathic indices were calculated for the various combinations. Cytopathic indices may possibly be useful as *in vitro* markers and as aids in the study of methods for improving virus cultivation.

Giroud, P., Le Gac, P., Dumas, N. & Colas-Belcour, J. (1959). Le hérisson *Erinaceus europaeus*, réservoir de rickettsies ou de néorickettsies et même d'agents du groupe de l'avortement des ovins. **[Hedgehogs as sources of rickettsia and viruses, with refer-**

ence to Q fever and ovine virus abortion.]—Bull, Soc. Pat. exot. **52,** 726-730. 2581

Positive serological reactions for *Rickettsia burneti,* ovine abortion virus, and strain X.14 of the psittacosis-lymphogranuloma group were found in hedgehogs obtained from various districts in France where similar reactions had been observed in cattle.—M.G.G.

See also absts. 2510 (avian encephalomyelitis and infections with P.P.L.O.); 2760 (report, Canada); 2762 (report, Australia).

IMMUNITY

Makari, J. G. (1960). **An antibody inhibitor.**—Nature, Lond. **185,** 747-749. 2582

An antibody inhibitor was demonstrated in normal human serum. It prevented the fixation of antibody globulins to smooth muscle in the Schultz-Dale test and the flocculation of normal globulins in the presence of cephalin-cholesterol-ether emulsions.
—M.G.G.

Nossal, G. J. V. (1960). **Antibody production by single cells. IV. Further studies on multiply immunized animals.**—Brit. J. exp. Path. **41,** 89-96. [Author's summary modified.] 2583

Further work on the phenotypes of antibody-producing cells from animals immunized with 2 or 3 antigens is reported. Cells from rats immunized with mixtures of 2 salmonella flagellar antigens were tested for antibody production. Of these, 125 produced one or other antibody but none produced both. A further 351 cells from rats immunized with 3 antigens contained 102 single producers, but no double or triple producers. When rats were serially immunized with 2 antigens, similar phenotypic restriction of antibody-producing capacity was observed amongst 154 cells removed some weeks later.

Rice, C. E. ,1959). **Complement fixation tests of multiple antigen antibody systems. III. The effect of variation in the relative proportions of antigens and antibodies in antigen titrations.**—Canad. J. comp. Med. **23,** 360-368. 2584

Complement-fixation tests of mixtures of protein and of carbohydrate antigens respectivelv with their corresponding antisera were studied. The data indicated that antigen prozones were evident in tests of single antigen-antibody systems. These mav be obscured in tests of multiple antigen-antibodv systems if a zone of increasing fixation should overlap one of decreasing fixation.—R. V. L. Walker.

Bergrahm, B. (1960). **Glacial acetic and picric acids as a fixation for gel precipitation.**—Nature, Lond. **185,** 242-243. 2585

Precipitation lines involving proteins in immunological systems in agar gel plates may be fixed by a mixture of 6% glacial acetic acid and 94% saturated picric acid solution (final pH 2·1). These acids appear to complement each other and it is suggested that such a mixture can be employed with advantage especially when the systems under study yield only very weak precipitation.

The duration of fixation is not given but is described as "short". It is recommended that serum be highly diluted or the gel washed thoroughly before fixation in order that precipitation arising from other serum proteins does not obscure interpretation.
—J. H. Darbyshire.

Crowle, A. J. (1960). **Four modifications of the micro agar diffusion precipitin test.**—J. Lab. clin. Med. **55,** 593-604. [Author's summary modified.] 2586

Four basic modifications of Wadsworth's type of micro agar diffusion precipitin test are: first, a single-diffusion technique, used to determine values similar to the classic optimal proportion ratio for one or more antigen-antibody systems in a single test. The second is a double diffusion quantitative technique particularly useful in the measurement of antigen or antiserum reactivity for several unequally reactive systems at one time.

The third modification is a very sensitive comparator technique with excellent resolution, designed to give the maximal chances of precipitin band convergence under adverse conditions such as obtain when a complex mixture of antigens which vary widely in concentration is being compared with another similarly complex antigen mixture against a standard antiserum.

For the fourth modification, a Plexiglass matrix has been designed as the key piece of apparatus in a very simple but highly sensitive microimmunoelectrophoretic technique particularly adaptable to routine use.

Allison, A. C. & Humphrey. J. H. (1960). **A theoretical and experimental analysis of**

double diffusion precipitin reactions in gels, and its application to characterization of antigens. —Immunology 3, 95-106. [Authors' summary.] 2587

The distribution of antigen and antibody in radial double diffusion systems was studied by means of materials labelled with ^{131}I or ^{14}C. These studies showed that, once a precipitate begins to form, the assumption that antigen and antibody obey the laws of free diffusion is invalid. They also showed that, in the systems used, no antigen and very little antibody diffused past the zone of visible precipitation.

It was found that accurate estimates of the diffusion constants of antigens could be obtained by allowing antigen and antibody to diffuse from troughs set at right angles and by measuring the angle of the precipitin line. Examples of the use of this method, and a theoretical treatment are given.

An alternative method for estimating the size of antigens is to use the 'molecular sieve' properties of gelatin gels, which are sharply graded with the concentration of the gel.

Boyer, G. (1960). **Chorioallantoic membrane lesions produced by inoculation of adult fowl leucocytes.** — Nature, Lond. **185**, 327-328. 2588

Cells from the blood, spleen or thymus of adult fowls, when placed on the chorioallantoic membrane of 10–14 day chick embryos, produced nodular lesions on the membranes, splenomegaly and hepatomegaly. The changes in the spleen and elsewhere in the embryo were more severe if the cells were administered by the intravenous route. The leucocyte fraction of the blood, and not the red cells, nor serum, was capable of inducing the phenomenon, and 10–100 thousand peripheral blood leucocytes were required to produce a nodule.

It is suggested that the nodular chorioallantoic membrane lesions result from an immunological reaction between adult cells and embryo recipient of the 'donor *versus* host' type.—W. E. Parish.

I. Hosoda, T., Mogi, K., Kaneko, T. & Watanabe, S. (1959). **[Studies on haemolytic icterus of foals. I. Role of horse blood groups, agglutinogens and haemolysinogens in inducing haemolytic icterus and the presence of atypical isoantibodies in dam's serum.]**—Bull. Nat. Inst. agric. Sci., Japan, Ser. G No. 16 pp. 75-80. [In Japanese. Summary in English.] 2589

II. Hosoda, T., Mogi, K. & Kaneko, T. (1959). **[Studies on haemolytic icterus of foals. II. Classification of horse blood cells by atypical antibodies.]**—Ibid. pp. 81-85. [In Japanese, Summary in English.] 2590

III. Hosoda. T., Kaneko, T. & Mogi, K. (1959). **[Studies on haemolytic icterus of foals. III. Serochemical characters of antigenic substances.]**—Ibid. pp. 87-91. [In Japanese. Summary in English.] 2591

IV. Hosoda, T., Mogi, K., Kaneko, T. & Abe, T. (1959). **[Studies on haemolytic icterus of foals. IV. Production of type-specific atypical antibodies by isoimmunisation and fluctuation of natural antibodies in mare serum.]**—Ibid. No. 18 pp. 223-228. [In Japanese. Summary in English.] 2592

I. Differences in blood groups, agglutinogens Pf_1 and Pf_2 and haemolysinogens U_1 and U_2 in foals and their dams and sires did not result in haemolytic icterus in the offspring but atypical isoantibodies in the serum of mares did. By immunization of rabbits against r.b.c. from affected foals, a new agglutinogen, Pf_3, present in over 90% of samples, was demonstrated, which, however, was not always linked with haemolytic jaundice.

II. A method of blood grouping was established based on the presence of atypical isoantibodies in the serum of pregnant mares. There were three types of atypical isoantibodies, designated anti-H_1, anti-H_2 and anti-H_3, corresponding to H_1, H_2 and H_3 antigens, the distribution of which was 49·1%, 86·8% and 82%, respectively, with slight variations in different breeds of horses.

III. Antigens H_1, H_2 and H_3 were present in blood cell stroma of foals with haemolytic icterus, from which they were recovered in phosphate buffer pH 8·04, after ultrasonic treatment.

IV. Since type-specific atypical isoantibodies were easily produced experimentally by isoimmunization of horses, it was considered likely that antibodies responsible for haemolytic icterus in foals could be produced by transfusion of incompatible blood. But since type-specific atypical antibodies were also present in foals, dams and sires without a history of this disease, the production of these isoantibodies may have genetic associations. There

were two types of unexplained fluctuations of type-specific antibodies in serum of naturally sensitized mares, one type having high antibody titres throughout the year, the other showing a distinct decrease 1–2 weeks before and after parturition.—E.G.

See also absts. **2439** (double gel-diffusion test for anthrax); **2440** (anthrax); **2446-2449** (TB.); **2450-2454** (Johne's disease); **2471-2483** (brucellosis); **2484-2489** (leptospirosis); **2525** (production of anaplasmosis antigen); **2527-2532 & 2536** (F. & M. disease); **2534** (double gel-diffusion test in rabies); **2538** (fowl pox vaccine); **2549** (Rift Valley fever vaccine); **2553-2555** (swine fever vaccine); **2559** (tissue culture distemper vaccine); **2560** (combined canine distemper-leptospirosis vaccine); **2567-2574** (Newcastle disease); **2579** (response in turkeys to poliomyelitis virus).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Voblikova, N. V. (1960). **[Chlorophos (Dipterex) for destroying first-stage larvae of Oestrus ovis in reindeer.]** — Veterinariya, Moscow **37**, No. 4. pp. 79-80. [In Russian.] **2593**

An aq. soln. of 1% chlorophos killed first-stage larvae of *O. ovis* in 24–36 sec. *in vitro*. Spraying the nasal cavities of reindeer with 1% or 3% chlorophos killed 83% of larvae. No side effects were seen.—M.G.G.

Drummond, R. O. (1959). **Cattle grubs in gullets of cattle from southwestern Texas.**—J. econ. Ent. **52**, 1221-1222. **2594**

Peak infestation of the oesophagus of cattle with *Hypoderma lineatum* larvae is later in the year as the latitude increases, *e.g.* September in Texas, October in New York. D. collected oesophageal larvae from May 1957–May 1959 and found max. infestation (72–82%) in August–September, with up to 9·3 larvae per oesophagus. Peak oesophageal infestation and encystment in the skin of the back were later in 1958 than 1957. (In this part of the U.S.A. warble larvae pierce the skin in the same year that they have infested the oesophagus.)—W. N. Beesley.

Dunn, P. H. (1960) **Control of house flies in bovine feces by a feed additive containing Bacillus thuringiensis var. thuringiensis Berliner.**—J. Insect Path. **2**, 13-16. [Author's summary modified. **2595**

Steers given *Bacillus thuringiensis* as an additive in their feed, produced faeces which prohibited normal imago development of nearly all the 48-hour-old *Musca domestica* larvae reared in the faeces. Most of the mortality occurred in the pupal rather than the larval stage. Faeces from control animals allowed development of all except 19% of the fly larvae which were added to them. It is suggested that a toxin is the cause of the mortality.

McDonald, W. A. (1960). **Nocturnal detection of tsetse flies in Nigeria with ultra-violet light.**—Nature, Lond. **185**, 867-868. **2596**

A portable equipment consisting essentially of a car battery, convertor and two 80-watt ultra-violet bulbs in parabolic reflectors is described, by means of which previously painted tsetse flies can be identified at night. Trials with *Glossina palpalis* indicated that about half the flies rest within 12 in. from the ground, on leaves or small twigs, but never on tree trunks or branches. *G. submorsitans* rest on twigs, leaves and small creepers at heights ranging from one to 15 feet., with the majority above 7 ft.—E.V.L.

Neitz, W. O. (1959). **Sweating sickness: the present state of our knowledge.**—Onderstepoort J. vet. Res. **28**, 3-38. **2597**

This is an informative review of all aspects of the tick-borne toxicosis known as 'sweating sickness'. The condition principally affects young calves although sheep, pigs and goats are also susceptible. It occurs in Central, Eastern and South Africa, southern India and Ceylon and this review would be of particular interest to veterinarians in those parts of the world.

The author, who considers that the causal agent is a toxin, discusses the history, aetiology, transmission, epizootiology, pathology, symptoms, diagnosis, treatment, prophylaxis and immunity of the disease. A very useful list of references is appended and the text is interspersed with fourteen detailed tables dealing with experimental data, distribution and hosts of tick vectors.—J. H. Darbyshire.

Theiler, G. (1959). **Ticks: their biology and their distribution.**—J. S. Afr. vet. med. Ass. **30**, 195-203. Discussion: pp. 232-234. **2598**

In this comprehensive review T. stresses the need for more data on the host preferences and distribution of each species of tick. Small field rodents are not such important alternative hosts as was believed formerly and attention is now being given to elephant shrews, hares and migrant birds.—W. N. Beesley.

Blomefield, L. C. (1959). **The practical application of some of the new synthetic insecticides in the control of ticks.**—J. S. Afr.

vet. med. Ass. **30**, 205-215. Discussion: pp. 232-234. **2599**

0·25% toxaphene is recommended against larvae of *Boophilus decoloratus* (blue tick), *Rhipicephalus appendiculatus* (brown tick) and *Amblyomma hebraeum* (bont). 0·02% *gamma*-BHC is effective against the last 2 species but 0·15–1·30% pp DDT should be substituted for treatment of *Boophilus*. The use of a 2,500–3,000 gal. dipping tank is suggested. For spraying cattle B. recommends a 12–18 foot race, with 45–50 nozzles spraying 10,000–12,000 gal. hourly at about 30 lb. per sq. inch pressure. Hand spraying is slow (4 min. per beast) but very efficient.

—W. N. Beesley.

Whitehead, G. B. (1959). **The development and mechanism of insecticide resistance in the Blue tick, Boophilus decoloratus Koch.**— J. S. Afr. vet. med. Ass. **30**, 221-232. Discussion: pp. 232-234. **2600**

W. reviews the problem of tick resistance to arsenic (0·16%), DDT and BHC, between which there is no cross-resistance. Increased levels of sulphydryl-containing compounds may be associated with arsenic resistance. Resistance to DDT may confer a cross-resistance to pyrethrum. There is so far no resistance to the organo-phosphorus compounds or the carbamate, Sevin.—W. N. Beesley.

I. Polyakov, D. K. (1958). **[Seasonal dynamics of demodectic mange in cattle and attempts at treatment.]**—Trudy Vsesoyuz. Inst. vet. Sanit. i Ektoparasit. **13**, 107-116. [In Russian.] **2601**

II. Polyakov, D. K. (1959). **[Morphological changes in the skin of cattle in relation to the life cycle of Demodex bovis.]**—Ibid. **14**, 34-35. [In Russian.] **2602**

I. Examination of colonies of *Demodex bovis* in the skin of cattle revealed the greatest multiplication from January to August. Young forms predominated during this period, whereas adult forms prevailed from September to January. Mites appeared on the surface of the skin in spring and summer. In a trial with 13 infested cattle, i/v injection of 1% trypanblue plus 20% sodium salicylate or skin application of 2% aq. soln. of chlorten reduced but did not eradicate infestation, while application of 4% DDT or 2% hexachlorane (BHC) had no effect.

II. In a 10-month study of demodectic mange in 46 cows, microscopic examination revealed that the nodules appeared at the beginning of active metamorphosis of the mites, and disappeared when the mites moved on to the surface of the skin. The early phases of development of the mites had the greatest pathological effect.—M.G.G.

Klinskii, Y. D. (1959). **[Morphology and biology of Demodex ovis.]**—Trud. Vsesoyuz, Inst. vet. Sanit. **15**, 38-45. [In Russian.] **2603**

Two types of demodectic mite occurred in sheep, one in coarse-wooled and the other in fine-wooled breeds.—R.M.

See also abst. **2762** (report, Australia).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Chakrabarty, M. & Sinha, P. K. (1960). **On the occurrence of Opisthorchis tenuicollis (Rudolphi, 1819) Stiles and Hassal, 1896 (syn. O. viverrini (Poirier, 1886) Stiles and Hassal, 1896) in domestic cat in India.**— Indian vet. J. **37**, 17-18. **2604**

From the bile ducts of a domestic cat the authors recovered both *O. felineus* and *O. tenuicollis*. The latter species had not previously been recorded in India.

—R. N. Mohan.

Haiba, M. H. & Selim, M. K. (1960). **A comparative preliminary biochemical study on the effect of fasciola infestation in bile and serum of Egyptian buffaloes, cows and sheep.** —Z. Parasitenk. **19**, 535-540. [In English.] **2605**

The effect of fasciola infestation on the specific gravity and content of water, solids, organic matter and minerals of bile and serum differed between Egyptian sheep, cattle and buffaloes. From this, and morphological differences between the flukes of these animals, the conclusion was drawn that these 3 species are each parasitized by a different type of fasciola.—M.G.G.

Duffill, M. L. & Lyon, M. F. (1960). **Flaked maize as a source of tapeworm infestation in mice.**—J. Anim. Tech. Ass. **10**, 148-149. **2606**

Cysts of *Taenia taeniaeformis* were found in 74 of about 500 mice which had been fed flaked maize but not in any of an equal number which had not been fed maize. It is concluded that the maize was the source of infestation and that it was already contaminated before its introduction into the animal house—probably by cats kept to control mice and rats.

—T.E.G.R.

been expected. In favour of the diagnosis of EIA were the following points: the infective agent was present in filtered serum and survived multiple freezing and thawing; experimental horses showed recurrent fever at intervals of three weeks or more, over a period of 161 days; r.b.c. counts showed a decrease of 2–3 million cells; and at P.M. examination, haemosiderosis was present but no specific pathological change.

Other participants in the discussion concurred that the disease was EIA. It had been considered too dangerous to bring the virus of EIA to Australia for comparison, but sera had been sent to the U.S.A. for examination, and identification of the cause might be carried out by L. G. Newton in Japan. Equine rhinopneumonitis and equine arteritis and their diagnosis were discussed, and it was learnt that on one property, 7 of 8 mares showing "colds" had aborted. The resemblance of the syndrome to Birdsville disease was mentioned. The emaciation syndrome was restricted to flooded river country and swampy areas but the vector was not known. It was suggested that the Forssman antigen in chick r.b.c. may have been responsible for haemagglutination, but precautions had been taken to absorb out these antibodies. The use of the term "rhinopneumonitis" in place of "equine influenza" was questioned.—N. WICKHAM.

Dhillon, S. S. (1959). **Incidence of rinderpest in camels in Hissar district.**—Indian vet. J. **36,** 603-607. **2543**

In the district records of animal diseases for the period 1948–58, were included 17 outbreaks of rinderpest affecting 128 camels, of which 60 died. The diagnosis was based on clinical symptoms only.—R. N. MOHAN.

De Boer, C. J. (1960). **Adaptation of two strains of rinderpest virus to tissue culture.**—Fed. Proc. **19,** No. 1 Part 1 p. 405. [Author's abst. modified.] **2544**

The Pak Chong strain from Thailand and a strain originally from Turkey have been adapted to tissue cultures of bovine kidney cells. Freshly prepared cultures were infected with infectious bovine spleen suspensions and left to form monolayers. Slight cytopathic changes were observed after 18 to 21 days. Formation of clusters of multinucleate cells on the periphery of gaps in and on the edge of monolayers occurred. Gradually, entire sections of the monolayer changed into a mesh-like structure containing increasing numbers of large multinucleate cells or syncytia. In the first subculture infected with inoculum from the 21-day-old original passage, slight cytopathic changes developed in 14 to 15 days. Inoculum for subsequent passages was taken at the peak of the cytopathic changes. Continuous passage resulted in gradual adaptation of both strains with cytopathic changes in 7 days. Following 8 or 9 passages, both strains had become adapted sufficiently to form a mesh-like structure before confluent monolayers developed. The infectious tissue culture medium is active as a complement-fixing antigen and is capable of producing the disease in cattle.

de Lange, M. (1959). **The histology of the cytopathogenic changes produced in monolayer epihelial cultures by viruses associated with lumpy skin disease.**—Onderstepoort J. vet. Res. **28,** 245-255. [Author's summary modified.] **2545**

From a study of the cytological changes induced in cultures of calf and lamb kidney cells and lamb testis cells by three distinct groups of viruses associated with lumpy skin disease it was concluded that these viruses are entirely unrelated. The cytopathogenesis of a virus isolated from bovine faeces is also described. Attention is directed to the similarity of cytopathic effects of these viruses to those induced by other viruses causing known disease conditions. The value of the histological study of cytopathogenesis in relation to virus research is discussed.

Shope, R. E., MacNamara, L. G. & Mangold, R. (1960). **A virus-induced epizootic hemorrhagic disease of the Virginia white-tailed deer (Odocoileus virginianus).**—J. exp. Med. **111,** 155-170. **2546**

A description is given of experimental studies of a highly fatal disease of wild deer which occurred in New Jersey in 1955. In all, 233 carcasses were found, although the total mortality was estimated at nearer 700.

This outbreak and a similar one in South Dakota a year later, do not appear to have recurred in those areas. (Similar outbreaks, however, have been recorded in deer in other areas of America by various workers.)

Experimentally, the disease was not so severe as the naturally occurring one; the experimental deer survived for periods ranging from 2 days to 2 weeks having exhibited symptoms as seen in field cases. The principal P.M. finding was widespread haemorrhages throughout the viscera and skeletal structures.

The aetiological agent seemed to be a

virus and neutralizing antibodies were demonstrated in sera of recovered deer, which were also immune. By cross-immunity tests it was shown that the N.J. and S.D. strains were related but not identical.

Attempts to infect other animals (calves, sheep, pigs, puppies, hamsters, mice, rabbits, g.pigs) were unsuccessful. The agent also failed to grow in eggs or on deer kidney cultures. It was shown to be unrelated to epidemic haemorrhagic fever of man or to the virus of equine arteritis.—J. H. DARBYSHIRE.

Gregory, T. S. (1959). **Bluetongue. [Discussion on paper presented in Brisbane in May.]**—Aust. vet. J. **35**, 330-332. **2547**

For the paper under discussion see *V.B.* **30**, 1051. Emphasis was on the threat of introduction of bluetongue and on the quarantine regulations imposed. The total ban on the importation of sheep and cattle into Australia was mentioned in relation to the absence of such restrictions in New Zealand and the unrestricted movement of animals in the U.S.A. Symptoms commonly observed in S. Africa were described.—N. WICKHAM.

Ferguson, W. (1959). **Identification of Rift Valley fever in Nigeria.**—Bull. epiz. Dis. Afr. **7**, 317-318. [In French pp. 319-320.] **2548**

The serum neutralization test for Rift Valley fever virus was positive for a healthy ram that had been feverish when imported from the Union of South Africa 3 months previously, and for 9 of 18 sheep and 2 of 5 calves on the same premises.—M.G.G.

Randall, R., Gibbs, C. J., Jr., Aulisio, C. G. & Binn, L. M. (1960). **Development of a formalinized Rift Valley fever vaccine.**—Fed. Proc. **19**, No. 1 Part 1 p. 219. [Authors' abst. modified.] **2549**

Live attenuated virus vaccines prepared with neurotropic strains have been widely used in animals but are not acceptable for man, and the viscerotropic virus is dangerous to handle in the laboratory. Since a formalin-killed vaccine of this strain was of marginal potency in man, an effective yet safe vaccine made from the viscerotropic strain has been sought. This report concerns development of a safe and effective formalin-killed vaccine. Monkey kidney monolayer cultures in medium 199 are inoculated with the viscerotropic strain. After incubation at 36°C. for 96 hours tissue culture fluids containing not less than $10^{7.5}$ mouse LD_{50}/ml. are harvested, filtered and formalin added to 1 : 1000 conc. Processing and safety testing methods employed resemble those prescribed for production of poliomyelitis vaccine. Vaccinated persons have neutralizing antibody levels averaging 3·62 logs and have handled infected material without acquiring the disease.

le Roux, J. M. W. (1959). **The histopathology of Wesselsbron disease in sheep.**—Onderstepoort. J. vet. Res. **28**, 237-243. [Author's summary modified.] **2550**

The histopathology of Wesselsbron disease is described. The lesions are mainly confined to the liver, which shows fatty infiltration, bile pigmentation, necrobiosis of the liver cells and infiltration of lymphocytes and neutrophiles. The histological picture tends to be variable and the lesions in experimentally infected cases are of a much milder degree compared to those observed in natural cases.

Immunization of pregnant ewes produces meningo-encephalitis in the foetuses.

The differential diagnosis is discussed and it is suggested that enzootic icterus [of unknown aetiology—de Kock (1928), 13th & 14th Rep., Dir. Vet. Ed. & Res., Onderstepoort pp. 659-671.] probably played a role during the 1957 outbreak of Wesselsbron disease.

Zlotnik, I. (1960). **Cerebellar and midbrain lesions in scrapie.**—Nature, Lond. **185**, 785. **2551**

The cerebellar lesions suggested by the clinical signs of scrapie were investigated in dorso-ventral sections taken through the middle of the cerebellum, parallel to the long axis of the brain. In each of 9 brains examined, from sheep with natural scrapie, there was degeneration and vacuolation of the Purkinje cells in a number of the folia of the paraflocculus while occasionally the neurones of the dentate nucleus were also affected. In the midbrains, in addition to the vacuolation of the pigmented cells of the raphe, there was chromatolysis of the neurones of the red nucleus; in the pons the neurones of the nucleus of the abducens nerve were degenerated and in the medulla lesions were found in the nuclei of the raphe, arcuate and formatio reticularis alba.—E.V.L.

Hartley, W. J. & Kater, J. C. (1959). **Polioencephalomalacia of sheep.**—N.Z. vet. J. **7**, 75-80. **2552**

During 1957 and 1958 a specific nervous disease in sheep was recognized and investigated in New Zealand. Records at Wallace-

in the gall bladder and the lowest in the brain. Expelled worms contained an average of 0·087 μg. of S^{35} per mg. The excreta of fowls had an average content of 0·245 μg. per mg. There was no difference in drug level in excreta containing worms or without worms.

I. Edeson, J. F. B. (1959). **Studies on filariasis in Malaya: the periodicity of the microfilariae of Brugia malayi and B. pahangi in animals.** —Ann. trop. Med. Parasit. **53**, 381-387. **2620**

II. Edeson, J. F. B. & Laing, A. B. G. (1959). **Studies on filariasis in Malaya: the effect of diethylcarbamazine on Brugia malayi and B. pahangi in domestic cats.**—Ibid. 394-399. [Authors' summaries modified.] **2621**

I. The periodicity of the microfilariae of *Brugia* (quondam *Wuchereria* in part) *malayi* and of *B. pahangi* was studied in naturally and experimentally infected animals—*B. malayi* in cats, long-tailed macaque monkeys and a slow loris, *B. pahangi* in cats, slow loris and a dog.

Natural infections of *B. malayi* in cats were semi-periodic. In experimental infections the periodicity was the same as that originally shown by the microfilariae in the donor. Natural infections in macaques showed a nocturnal periodicity, although the microfilariae showed other features characteristic of the semi-periodic form of *B. malayi. B. pahangi* microfilariae were semi-periodic.

II. The effects of diethylcarbamazine on microfilariae and adults of *Brugia malayi* and *B. pahangi* were studied in infected cats.

Three cats experimentally infected were treated with oral diethylcarbamazine. As compared with infections in man, microfilaria levels in the peripheral circulation were reduced slowly, despite large doses of the drug.

As poor absorption of the drug was a possible cause of this slow reduction, a parenteral form of the drug was prepared. Four cats infected with *B. malayi* and four cats infected with *B. pahangi* were treated by i/p injection in doses ranging from 5 to 100 mg. per kg. body wt. One cat also received an additional course by i/m inj. Action on microfilariae was still slow and microfilariae continued to circulate in three of the infected cats for 6–10 months after treatment, and were capable of developing normally in *Mansonioides* mosquitoes. Adult *B. malayi* and *B. pahangi* were killed by diethylcarbamazine; death was followed by calcification.

Saunders, L. Z. (1959). **On Yeh's revision of the nematode genus Setaria.**—Vet. Rec. **71**, 631-632. **2622**

After praising Yeh's paper [*V.B.* **29**, 463] on the genus *Setaria* reducing it to a single species (*S. equinus*) the author criticizes certain aspects of the work from the point of view of a pathologist.

(1) Cerebrospinal nematodiriasis may occur in epidemic proportions. (2) It is an aetiological entity caused by nematodes of the genus *Setaria* and is transmitted by various mosquitoes. (3) It is a neuro-pathological entity and has stereotyped and distinctive lesions. All these facts were discovered by a group of Japanese workers to whom credit should be given.—Brenda M. Wilson.

Bubnov, V. D. (1959). **[Effect of radiation from radiocobalt on development of eggs of Ascaris and Trichuris from pigs and on Fasciola eggs.]**—Trudy Vsesoyuz. Inst. vet. Sanit. i Ektoparasit. **14**, 83-85. [In Russian.] **2623**

Faeces containing eggs of these worms were irradiated with 84,600–1,621,800 roentgens. The eggs failed to develop, in contrast to eggs in untreated faeces.—M.G.G.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Jacob, K. (1959). Cerebrale Gliome bei Hunden. **[Cerebral glioma in dogs.]**—Zbl. VetMed. **6**, 945-962. [Summaries in English, French and Spanish.] **2624**

A description is given of the clinical, pathological and histological findings in three cases of intracerebral glioma in dogs. There seems to be a predisposition in brachycephalic dogs, most recorded cases, including these three, being in Boxers. All three were in bitches (though other workers maintain that 60% occur in males): glioblastoma multiforme in the right piriform and temporal lobes; a spongioblastoma in the left piriform lobe; and an ependymona in the right piriform lobe, touching the ventral horn of the lateral ventricle. A review is given of the incidence of gliomas, histogenesis, micropathology etc. Photomicrographs and a diagram are reproduced. J. attempted to relate the clinical symptoms to the neurological abnormality.

—Irene M. Grisedale.

Kersten, W. (1960). "Epithelioma Malherbe" beim Hund. **[Calcified epithelioma in a dog.]** —Berl. Münch. tierärztl. Wschr. **73**, 87-88. [Summary in English.] **2625**

A tumour from the leg of a Dachshund was identified by histological examination as a calcified epithelioma.—E.V.L.

Orkin, M. & Schwartzman, R. M. (1960). **A comparative study of canine and human dermatology. II. Cutaneous tumors—introduction and discussion of transmissible reticulum-cell tumor.**—Arch. Derm., Chicago **81**, 347-538. **2626**

A classification of 100 skin tumours in dogs is given. 17 of them were transmissible reticulum-cell tumour, and the features of this tumour were described and illustrated. Although histologically indistinguishable from human reticulum-cell sarcoma, the dog tumour often healed spontaneously—R.M.

Rogers, J. B. & Blumenthal, H. T. (1960). **Studies on guinea pig tumors. I. Report of fourteen spontaneous guinea pig tumors, with a review of the literature.**—Cancer Res. **20**, 191-197. **2627**

Two inbred strains of g.pigs were bred for ten years and all the animals were kept until they died. During this period 4,000 of one strain were born and tumours were found in 14; no tumours were found in 2,000 of the other strain. The tumours occurred in 14% of animals surviving for more than 3 years old and were not found in younger animals. They included 7 tumours of the uterus. Details of 124 spontaneous tumours of g.pigs previously reported were given.—R.M.

Potter, G. D., Lindsay, S. & Chaikoff, I. L. (1960). **Induction of neoplasms in rat thyroid glands by low doses of radioiodine.**—Arch. Path. **69**, 257-269. [Authors' summary modified.] **2628**

The development of neoplasms was studied in the thyroid glands of 200 Long-Evans rats two years after they had received either single injections of 25 μc or four separate injections of 10 μc of I^{131}.

Papillary and follicular carcinomas were observed in 12 of the injected rats. Benign thyroid nodules or adenomas were observed in all except two of the rats. Three adenomas were papillary. Naturally occurring alveolar or lobular carcinomas were found in about a third of the rats. A high incidence of hyperplastic and neoplastic parathyroid lesions was not considered to be an irradiation effect.

Prince, A. M. (1959). **Quantitative studies on Rous sarcoma virus. IV. An investigation on the nature of "non-infective" tumours induced by low doses of virus.**—J. nat. Cancer Inst. **23**, 1361-1381. **2629**

Rous sarcoma without detectable amounts of virus, produced by s/c inj. of highly diluted virus in chicks ten days old, was termed "non-infective". Cells of such tumours did not produce changes in the chorio-allantoic membrane of chick embryos or in tissue culture. Such cultures were, however, resistant to infection with Rous sarcoma virus. After serial transplantation virus again became detectable.—E.G.

Holzworth, J. (1960). **Leukemia and related neoplasms in the cat. I. Lymphoid malignancies. II. Malignancies other than lymphoid.**—J. Amer. vet. med. Ass. **136**, 47-69 & 107-121. **2630**

Malignant diseases of the white-cell forming tissues are of great importance in cats, being predominantly of lymphoid type. In these papers, H. presents a well illustrated account of these conditions, particularly from the clinical and morbid anatomical aspects. The first paper is concerned with lymphosarcomas. Clinically, there is a wide range of symptoms, and correspondingly varied sites of tumour involvement, such as kidneys, intestines, anterior mediastinum, lymph nodes and spleen. In the second paper, cases of myeloid, eosinophile, basophile, and monocytic leucaemia and of myeloma are discussed. Attention is drawn to the common previous history of anaemia or of infectious diseases. Some very useful illustrative blood pictures are shown, and there is an extensive bibliography.

The original papers are strongly recommended to those clinicians who have to deal with cats.—E. COTCHIN.

Darcel, C. Le Q. (1960). **Paper electrophoresis of sera and plasma from chicks affected with erythroblastosis.** — Canad. J. Biochem. Physiol. **38**, 383-391. [Author's abst. modified.] **2631**

Plasma and sera from normal and leucaemic (erythroblastosis) fowls were studied with the aid of paper electrophoresis. Differences are more easily demonstrable with pH 6·4 phosphate buffer than with barbiturate buffer. There is a relative depression in serum albumin and an apparent 'shift' in the posi-

tions normally occupied by the α- and β-globulins. The latter regularly appear to move as one band in the electrophoresis pattern of sera from leucaemic birds. It has been possible to induce this 'shift' in normal sera by storage or incubation.

NUTRITIONAL AND METABOLIC DISORDERS

Mori, A. (1959). **Studies on the reproductive failure of ram caused by underfeeding. I. On the effects of underfeeding upon the mating potency of ram, and the effects of normal feeding upon its recovery from impotence. II. On the effects of feeding milk, pork and eggs to impotent ram. III. On the effects of injecting saline emulsion of sheep pituitary gland to impotent ram.**—Tohoku J. agric. Res. **10**, 263-281 & 283-288; 347-352. [In English.] **2632**

M. investigated impotence in 425 rams of Corriedale, Merino and improved Shansi breeds kept on the Chinese mainland. He concluded that grossly deficient nutrition was the cause. Data for reproductive performance were given. When adequate rations were given fertility was restored after a few months in most cases. Feeding milk, pork or eggs to the rams appeared to hasten recovery, so did injections of pituitary gland emulsion obtained from castrated male sheep.—R.M.

Mori, A., Ambo, K. & Sugawara, S. (1959). **Studies on the reproductive failure of ram caused by underfeeding. IV. On the testicular function and the potency of anterior pituitary in underfed ram.**—Tohoku J. agric. Res. **10**, 353-368. [In English.] **2633**

Two yearling rams were fed rice straw (a diet low in protein) one for 6 weeks and the other for 5 months. Two controls were kept. Observations were made on abnormal spermatozoa, the endocrine status of the animals, and other changes brought about by undernutrition.—R.M.

Matthijsen, H. F. (1960). Enige gegevens over in gevangenschap gehouden wilde dieren, speciaal hun voeding betreffende. **[Some data about wild animals held in captivity, especially their feeding.]**—Tijdschr. Diergeneesk. **85**, 197-209. [In Dutch. Summaries in English, French and German.] **2634**

M. investigated the diet of animals in Blijdorp Zoo in Rotterdam and concluded that it would be better to replace the present system by the seven standard diets recommended for the Philadelphia Zoo by H. L. Radcliffe (1956).—R.M.

Preston, T. R., Rattray, E. & White, F. (1960). **Effects of feeding formalin-treated skim milk to calves.**—Anim. Prod. **2**, 33-36. [Authors' summary.] **2635**

2-week-old calves previously fed whole milk were changed abruptly to skim milk which had been treated with formalin to give a final concentration of 0·1% of the preservative.

Difficulty was experienced in accustoming the calves to drink such formalin-treated milk and scouring invariably occurred within two days of the change-over.

Post-mortem and histological examination of calves fed formalin-treated skim milk showed severe damage to the alimentary tract compatible with clinical symptoms.

None of the above findings was apparent in control calves fed untreated skim milk.

Lecce, J. G. & Matrone, G. (1960). **Porcine neonatal nutrition: the effect of diet on blood serum proteins and performance of the baby pig.**—J. Nutr. **70**, 13-20. [Authors' summary modified.] **2636**

Serum protein patterns from new-born unfed pigs were compared with serum from mature pigs. With pigs sucking the sow there were not only rather intense and immediate changes in serum proteins, but also a continuous and rapid alteration toward the mature serum protein pattern. Pigs fed an amino-acid milk had little ability to promote these normal changes. Cow's milk and artificial milk were intermediate between the two extremes of those fed sow's milk and amino-acid milk. Piglets having static, immature patterns were less able to react to treatment than piglets having rapidly-maturing patterns.

Kötsche, W. (1960). Vergleichende Untersuchungen zur Frage des Kümmerns der Schweine. **[Studies on runt pigs.]**—Arch. exp. VetMed. **14**, 218-270. **2637**

Detailed clinical, pathological and haematological study of 81 runt pigs indicated that the retarded development was due to disturbance in metabolism brought about mainly by pneumonia and favoured by faulty management or nutrition, parasitic infestations and possibly constitutional weakness. There was no evidence that runt pigs were dwarfs. It was useless to attempt to rear runt pigs, because they never recovered metabolic equili-

brium. The literature on this subject is reviewed (55 references). There are 53 illustrations (mostly photomicrographs) and a colour plate.—R.M.

Wood, J. D. & Biely, J. (1960). **A substance in lingcod liver oil which prevents hypercholesterolaemia in cholesterol-fed chickens.**—Nature, Lond. **185**, 473-474. 2638

In chicks given cholesterol as 1% of the diet, feeding lingcod fish-liver oil or its unsaponifiable fraction prevented a rise in cholesterol content of the blood, whereas corn oil, herring oil, and the free fatty acids of all 3 oils enhanced the rise in blood cholesterol. The unsaponifiable portion of corn oil and herring oil did not prevent or slightly increased the rise in blood cholesterol. It is suggested that the inhibitory factor may be vitamin A or a sterol.—M.G.G.

Adameşteanu, I. & Suţeanu, E. (1960). Über die Untugend des Federfressens bei Enten. **[Feather-picking in ducks.]**—Mh. VetMed. **15**, 56-57. 2639

Feather picking developed in 21 ducks fed 1–2 ml. daily of rancid fish-liver oil for 38 days, and ceased after the oil was withdrawn from the ration. Signs of vitamin deficiency were not seen.—M.G.G.

Henneman, P. H. (1959). **Effects of high calcium intakes on renal function.**—Fed. Proc. **18**, 1093-1096. 2640

The experimental evidence available is reviewed. This is scanty and contradictory and many suggestions are made for further research. Although it appears that hypercalcaemia usually depresses renal functions with the concentrating ability of the kidney first affected, most of the data available have not excluded the concomitant effects of parathyroid hormone, vitamin D or other dietary changes.—Joyce E. Hammant.

Lofgreen, G. P. (1960). **The availability of the phosphorus in dicalcium phosphate, bonemeal, soft phosphate and calcium phytate for mature wethers.**—J. Nutr. **70**, 58-62. [Author's summary modified.] 2641

The true digestibility of the phosphorus in the supplements was 50, 46, 14 and 33% for dicalcium phosphate, bone meal, soft phosphate and calcium phytate, respectively. Significantly less phosphorus was absorbed from calcium phytate than from dicalcium phosphate and bone meal.

Mullins, J. C. & Ramsay, W. R. (1959). **Haemoglobinuria and anaemia associated with aphosphorosis. [Discussion on paper presented in Brisbane in May.]**—Aust. vet. J. **35**, 328-329. 2642

For the paper under discussion see *V.B.* **29**, 3913. Hypophosphataemia appears to be seasonal, being most common in winter. Rape and turnip were mentioned as a cause of haemoglobinuria and death, but the authors stated that the syndrome was not associated with the ingestion of any plant. In the Northern Territory, aphosphorosis was not accompanied by post-parturient haemoglobinuria. Reference was made to lameness in beef cows after their third calf, in old bulls with joint lesions, and to Ca/P imbalance in hand fed cattle.—N. Wickham.

Munday, B. (1959). **Observations on parenteral copper therapy in cattle.**—Aust. vet. J. **35**, 502-503. 2643

In a small trial of i/v and i/m injections of copper formulations, groups of cattle were run together on the same pasture and were treated with 60 or 120 mg. Cu as 2·4% $CuSO_4$ solution i/v, or a proprietary copper cerate (400 mg. copper glycinate = 120 mg. Cu) i/m.

It appeared that, under the conditions of the experiment, the blood copper levels were influenced by factors of management and not by the treatments.—A. Culey.

Ullrey, D. E., Miller, E. R., Thompson, O. A., Ackermann, I. M., Schmidt, D. A., Hoefer, J. A. & Luecke, R. W. (1960). **The requirement of the baby pig for orally administered iron.**—J. Nutr. **70**, 187-192. [Authors' summary modified.] 2644

Forty-five baby pigs were fed a synthetic milk diet (Fe content 25 p.p.m. of solids) supplemented with 0, 10, 50, 100 or 200 p.p.m. of ferrous sulphate crystals. Observations were made once or twice a week on weight gain, haemoglobin concentration, haematocrit, erythrocyte, reticulocyte and leucocyte counts, serum proteins, serum iron concentration, unbound iron-binding capacity of serum and percentage saturation of transferrin with iron. Iron balance studies, bone marrow biopsies and tissue analyses were also performed. Under the specified conditions, 125 p.p.m. of iron in the food appeared to be adequate.

Hvidsten, H., Ødelien, M., Baerug, R. & Tollersrud, S. (1959). **The influence of fertilizer treatment of pastures on the mineral composition of the herbage and the incidence of**

hypomagnesemia in dairy cows.—Acta agric. scand. **9,** 261-291. [In English. Abst. from authors' summary.] **2645**

Cows on pasture heavily dressed with potassium, or with potassium plus nitrogen, showed on the average less Mg in blood serum than those on pasture less heavily fertilized. In each of 3 years a distinct fall in serum Mg and P occurred during the early pasture period.

The incidence of hypomagnesaemia was highest for the highest values of K, or K/(Ca+Mg), in the pasture grass.

Marked individual variations were observed in the ability of the cows to maintain normal serum Mg on heavily fertilized pasture.

Supplements of hay and concentrates, fed during the first days of the pasture period, counteracted the decrease in serum Mg.

Serum Mg was not influenced by heavy doses of vitamin D, nor by feeding treated straw during the pre-pasture period.

Roberts, A. H. & Yudkin, J. (1960). **Dietary phytate as a possible cause of magnesium deficiency.**—Nature, Lond. **185,** 823-825. **2646**

Rats given a purified diet containing 2·5, 5, 7·5 or 10% sodium phytate became severely ill. The main symptom was diarrhoea; convulsions occurred in some. A diet containing 1% phytate did not cause convulsions but growth was stunted. These effects were diminished by adding 10% magnesium sulphate to the diet. Phytate formed insoluble mixed salts of Ca and Mg. The authors suggested that hypomagnesaemia in ruminants may be caused by the presence in the food of phytate or other compounds that can make Mg not available to the animal.—R.M.

Cox, D. H., Davis, G. K., Shirley, R. L. & Jack, F. H. (1960). **Influence of excess dietary molybdenum on rat and calf liver and heart enzymes.**—J. Nutr. **70,** 63-68. [Authors' summary modified.] **2647**

Rats fed diets containing added molybdenum at 500 and 800 p.p.m. showed toxic symptoms including diarrhoea and decreased rate of growth. These diets did not affect tyrosine oxidase activity or conc. of copper in the liver, but caused an increase in Mo in this organ and a reduction in liver respiration and liver xanthine oxidase.

A second group was fed high-molybdenum diets which raised the conc. of Mo in the liver but did not cause diarrhoea. These rats also showed a reduction in liver xanthine oxidase activity. Decreased utilization of protein resulting from diarrhoea was not solely responsible for reduction in xanthine oxidase activity.

Calves maintained on diets containing 200 and 400 p.p.m. Mo were observed to have increased conc. of Mo in the liver, but no decrease in liver respiration or xanthine oxidase or in heart cytochrome oxidase.

Plotnikov, K. I. (1960). **[Role of trace elements in diseases of lambs on the Kulundinsk steppe.]**—Veterinariya, Moscow **37,** No. 3 pp. 53-58. **2648**

Gastro-intestinal and respiratory diseases of lambs in summer were attributed to excess boron and molybdenum in grass and water. The average amounts of Cu, Co, Mo and B in the blood of sheep and lambs over three successive years were studied. The soil of the steppe was poor in Co and Cu.—R.M.

Pullar, E. M. (1959). **Mineral deficiency in pigs with particular reference to the value of bone ash estimation in the diagnosis of rickets and osteodystrophia. [Discussion on paper presented in Brisbane in May.]**—Aust. vet. J. **35,** 339-340. **2649**

For the paper under discussion see *V.B.* **29,** 1419. Most comment concerned the possible causes of posterior paralysis in pigs. Deficiencies of iron and zinc were also discussed. Rupture of the atrium and piglet haemophilia were mentioned.—N. Wickham.

Lewis, K. H. C. (1959). **Mating of hoggets.**—Proc. N.Z. Soc. Anim. Prod. **19,** 111-119. **2650**

200 sheep were mated at about 8 months of age and they yielded 146 lambs. Four of the lambs died from white muscle disease; no losses from this disease were observed among 3,000 lambs from older ewes.—R.M.

Nelson, T. S. & Norris, L. C. (1959). **Factors affecting the vitamin K requirement of the chick.**—Poult. Sci. **38,** 1094-1102. **2651**

Haemorrhages in chicks and delayed blood clotting time have been the subject of numerous conflicting reports. The present authors reviewed some of the literature and investigated some factors affecting the vitamin K requirements of chicks, 30–34 days old. Under the conditions of the experiment sulphaquinoxaline (0·1% to 0·125% of the diet) supplied as a stress factor increased the blood clotting time, increased the number of haemorrhages, increased mortality and reduced weight gains. In the absence of sulphaquin-

oxaline, menaphthone sodium bisulphite prevented haemorrhages and reversed the increase in blood clotting time induced by a basal ration. In the presence of sulphoquinoxaline, menaphthone corrected only the prolonged blood clotting time.

Arsanilic acid, chlortetracycline and nicarbazin, a combination of these substances, and arsonic acid, caused a transitory slight increase in blood clotting time. This slight effect was reversed by menaphthone in the ration.

—S. B. KENDALL.

I. Gratzl, E. (1960). Eine durch Mangelfütterung (insbesondere Thiaminmangel) bedingte Encephalomyelopathie bei Pferden in Oesterreich. **[Encephalomyelopathy in horses in Austria, caused by nutritional deficiency, particularly thiamine deficiency.]**—Wien. tierärztl. Mschr. **47**, 25-51. [Summaries in English, French and Italian.] 2652

II. Köhler, H. (1960). Zur Pathologie einer in Oesterreich vorkommenden Leukoencephalomyelomalazie bei Pferden. **[Pathology of leucoencephalomyelomalacia in horses in Austria.]**—Ibid. 51-66. [Summaries in English, French and Italian.] 2653

I. The condition was first observed in Austria after 1950, when in many rural areas root crops were grown in preference to cereals. It occurred in horses which had been for a considerable time on a diet consisting almost entirely of fodder beet and straw. It did not occur where horses were fed oats, hay and chopped straw. Incidence was highest between January and April. Most cases were cured by s/c or i/v doses of 0·5–1 g. of thiamine. Of those not treated about two-thirds died. Clinically the disease resembled thiamine deficiency, but protein deficiency may have been a contributing factor.

II. Pathologically there was severe oedema of the white substance, particularly in the brain stem, resulting in liquefaction of medullary sheaths. Lesions in the grey matter were less severe. In this respect the condition differed from primary thiamine deficiency in which lesions predominate in the grey substance. Oedema was less severe in the cerebellum than in the medulla oblongata and spinal cord. In Purkinje cells there was pyknosis and cytolysis. Lack of thiamine, although not the cause of the disease, may influence its course. K. remarked on the striking similarity of lesions to those of "mouldy corn poisoning".—E.G.

Furness, G. & Axelrod, A. E. (1959). **The effect of deficiencies of thiamine, pyridoxine and pantothenic acid on the macrophages of the rat.**—J. Immunol. **83**, 133-137. 2654

Diets deficient in either pantothenic acid, pyridoxine or thiamine, were fed to young rats and resulted in a peripheral and peritoneal leucopenia. Macrophages from these and normal animals maintained in cell culture were exposed to suspensions of an avirulent strain of *Escherichia coli* and a virulent strain of *Salmonella typhi-murium*. Macrophages from all animals destroyed the avirulent *E. coli* and inhibited multiplication of the intracellular survivors. Macrophages from normal animals destroyed more *S. typhi-murium* organisms than those of the deficient animals, but the intracellular survivors multiplied more rapidly within the normal cells.—W. E. PARISH.

Timmis, G. M. & Epstein, S. S. (1959). **New antimetabolites of vitamin B_{12}.**—Nature, Lond. **184**, 1383-1384. 2655

Using *Euglaena gracilis*, a highly sensitive vitamin B_{12}-dependent green alga, as test organism, about a hundred compounds were screened for inhibitory activity at low concentrations of the vitamin. Fifteen compounds were found to be active and are listed with their formulae and the conc. required to inhibit a given amount of growth. The ways in which these substances may act and their possible role in disease are discussed.—E. J. CASTLE.

Osinga, A. (1959). Nader onderzoek omtrent de biochemische achtergrond en het herstel van paresis puerperalis post partum bij het Fries-Hollandse rund. **[The biochemical background of milk fever in Friesian cows and the process of recovery.]**—Thesis, Utrecht pp. 147. [Summary in English.] 2656

The blood chemistry of healthy cows, recently calved, was compared with that of those developing milk fever after parturition. Cows about to develop milk fever had lower plasma cholesterol values before delivery. The increase in blood haematocrit values occurring after delivery was greater in the sick cows and these animals also had lower serum Ca, Mg, organic phosphate and total cholesterol and higher glucose levels. These findings were indicative of decreased liver function and disturbed Ca metabolism. Injection of a solution containing complex organic salts of Ca and Mg, administration of vitamin D_3 and dihydrotachysterol and attempts to improve liver function by i/v glucose and administration of vitamin B, improved the condition of only some

animals. It was concluded that the stress of parturition led to milk fever if adaptation was abnormal because of partial failure of either the Ca metabolism mechanism, the pituitary-adrenal system or the liver.

—JOYCE E. HAMMANT.

Baaij, P. K. (1959). Enkele aspecten van de pensdigestie bij runderen in verband met acetonemie. **[Some aspects of rumen digestion in cattle in relation to acetonaemia.]**—Thesis, Utrecht pp. 95. [Abst. from English summary.] **2657**

Samples of the rumen content from a fistulated but otherwise healthy cow were compared with those from animals suffering from ketosis or other diseases. The lactic acid content was shown to rise rapidly after feeding, a much higher value being found in the test group. Comparison of the percentage of lower fatty acids showed a low propionic acid content in this group, which could be corrected by administration of chloral hydrate, propylene glycol, potassium chlorate, glycerol, sodium lactate. These drugs also raised the propionic acid content in the rumen of the normal cow. It was suggested that a diet could be formulated containing regulated quantities of volatile fatty acids and so prevent ketosis.—JOYCE E. HAMMANT.

See also abst. **2762** (report, Australia).

DISEASES, GENERAL

Orlov, F. M. [Edited by.] (1959). **[Little-known contagious diseases of animals.]**—pp. 407. Moscow: Gosudarstvennoe izdatel'stvo sel'skokhoz. literatury. 9r. 20k. [In Russian.] **2658**

This collection of 25 short monographs by various authors describes diseases which are presumably little-known by Russian veterinary surgeons. Many are well-known outside the U.S.S.R. (*e.g.* mucosal disease complex, Rift Valley fever, equine encephalomyelitis), while others like plague in camels, coccidioidomycosis and cryptococcosis are uncommon. Other chapters include oedema disease of pigs, toxoplasmosis, Q fever, and listeriosis.—R.M.

Likhachev, N. V., Chernyshev, V. V. Vasil'kov, G. V. [Edited by.] (1959). **[Brucellosis of farm animals and swine fever. Report of a conference held at Krasnayaisk in 1957.]**—pp. 252. Moscow: Izdatel'stvo Ministerstva Sel'skogo Khozyaistva SSSR 7r. 50k. [In Russian.] **2659**

The 4-day conference was convened to discuss speeding up of eradication in the Urals, Siberia and the Far Eastern Zone, and 400 veterinarians attended. This report comprises 23 papers on brucellosis and 11 on swine fever. Most of them relate local experiences with control measures and vaccines. Exceptions are:—disinfectants for brucellosis by A. A. Polyakov; immunization of cattle by application of Strain 19 vaccine to the intact intranasal mucosa, by K. F. Lamikhov; immunization of sheep with *Br. abortus* Strain M, by E. I. Zamakhaeva & S. V. Abakin; electron microscopy for the diagnosis of swine fever, by I. I. Kulesko & I. Y. Ageev [also published elsewhere: see *V.B.* **30,** 1825].—R.M.

Mammerickx, M. (1960). Le buffle. (Monographie du genre Bubalus.) **[The buffalo. A review.]**—Bull. agric. Congo belge **51,** 171-211. [In French. Summary in Flemish.] **2660**

A general article on the buffalo (domestic and wild), its anatomy and physiology and diseases to which it is susceptible—these include *Plasmodium bubalis* infection and a chronic disease of the ear, of unknown aetiology, though sometimes ascribed to *Stephanofilaria*.—T.E.G.R.

Anon. (1959). **[Diseases of rabbits.]**—pp. 222. Moscow: Gosudarstvennoe izdatel'stvo sel'skokhoz. literatury 2r. 95k. [In Russian.] **2661**

A booklet on infectious, parasitic and non-infectious diseases written for veterinary surgeons who attend to rabbit farms. It is issued by the State Publishers of Agricultural Literature and costs the equivalent of 4 shillings.—R.M.

Svenkerud, R. (1960). **Melanosis renum bovis.**—Acta vet. scand. **1,** 161-187. [In English. Summaries in German and Norwegian.] **2662**

The condition was observed at slaughter in 43 of 763 Danish Red cattle but not in other breeds; this suggests hereditary factors in its aetiology. Distribution of melanin in the kidneys and other organs and tissues is presented and details are given of the chemical composition of the pigment.—T.E.G.R.

Setinski, Z., Hajsig, M. & Rižnar, S. (1960). **Zapažanja o upali rodnice nepoznate etiologije kod goveda. [Purulent vaginitis of unknown aetiology in cattle.]**—Vet. Arhiv **30,** 33-37. [In Croat. Summaries in English and German.] **2663**

Of 163 cows and heifers, examined 2–35 days after service, a number had purulent vaginitis. Symptoms were more marked in those served recently. There were no vesicles, nodules or erosions in the vaginal mucosa. In the majority, bacteriological examination was negative, although in a few staphylococci, streptococci, *Corynebact. pyogenes, C. renale, Escherichia coli, Proteus vulgaris,* etc., were present. *Trichomonas foetus* was not demonstrable microscopically. The causative agent appeared to be a virus, or possibly a fungus. The disease did not appear to affect fertility.
—E.G.

van den Akker, S. (1958). **A case of leucodystrophia in a dog.**—Folia psychiat. neerl. **61,** 536-539. [In English. Author's summary modified.] **2664**

Description of a disease in a dog about five months old. Motor disturbances were noticed at the age of two weeks. There were no indications of familial occurrence. Pathologically there was symmetrical diffuse demyelination. There were no signs of inflammation.

Demyelination was greatest in the oval centres and the white matter of the cerebellum. Corpus callosum, fornices and internal capsules were less affected. Demyelination was also noticeable in the cortex; the brain stem and spinal cord may also have been slightly affected.

The author named the disease leucodystrophia and stated that it had not been described before in domestic animals and was probably congenital.

Di Martino, M. & Mastronardi, M. (1959). Mediastino e sindromi mediastiniche nel cane. Aspetti patogenetici, clinici e diagnostici. (Contributo clinico sperimentale). III. Sulla patologia del mediastino. **[The mediastinum and mediastinal syndromes in the dog. III. Pathology.]**—Acta med. vet., Napoli **5,** 389-412. [Summaries in English and French.] **2665**

The authors discuss the mediastinal syndrome generally, including diagnosis, and give the results of experiments on 11 dogs in which 3–4 ml. of oil of turpentine was injected into the dorsal mediastinum. One dog died. The others had respiratory distress and lameness of the forelegs.—W. K. Dunscombe.

Brion, A., Fontaine, M. & Labie, C. (1960). Ostéodystrophie raréfiante du jeune chat. **[Rarefying osteodystrophy in a kitten.]**—Rec. Méd. vét. **136,** 5-19. [Summaries in English and Spanish.] **2666**

Clinical and histological manifestations are described. The condition started as osteoporosis and developed into osteofibrosis. Certain histological changes suggested hyperactivity of the thyroid, pituitary and adrenal glands as causal factors. In the treatment of the condition some beneficial results were obtained with sex hormones and paraoxypropiophenone. It is considered that the disease is possibly hereditary, and may be aggravated by faulty nutrition.—T.E.G.R.

Fry, R. J. M., Hamilton, K. & Lisco, H. (1960). **An unusual spontaneous cardiac lesion of unknown etiology in mice.**—Fed. Proc. **19,** No. 1 Part 1 p. 109. [Authors' abst. modified.] **2667**

An enlarged and haemorrhagic left auricle filled with thrombi was found in a considerable proportion of inactive female breeders from 300 to 700 days old. This lesion was characterized by old focal areas of necrosis of the myocardium with calcification, extensive loss of muscle fibres and variable degrees of fibrous replacement which often contained islands of hyaline cartilage. The fibrosis was frequently associated with an unusual degree of vascularity. The auricles were filled with thrombi in various stages of organization and were usually 3–5 times their normal size. The condition was restricted to the left auricle and no changes have been found elsewhere in the myocardium or vascular system. Aetiology is obscure, although repeated pregnancies may be of some significance.

Urist, M. R. & Deutsch, N. M. (1960). **Osteoporosis in the laying hen.**—Endocrinology **66,** 377-391. [Authors' abst. modified.] **2668**

Osteoporosis develops in White Leghorn fowls during the first year of egg production and becomes severe during the moult. Immature, and young mature pullets, cockerels, and non-moulting cocks do not have osteoporosis. The disorder appears to be a derangement of the normal process of haversian remodelling: the compact bone is resorbed without osteoclast formation by tunnelling operations of blood vessels expanding inside the compact bone; new osteones are not rebuilt to replace old ones. Some of the endocrine organ changes associated with avian osteoporosis are: atrophy of the adrenal cortex and decrease in size and weight of the

gonads; reductions in the weight of the thyroids and parathyroids also occur but the decline is relatively slight and inconstant. The level of calcium in the blood plasma is low and either normal or low in ultrafiltrates of serum. Exogenous oestrogen (without androgen) increases resorption of cortical bone, accentuates osteoporosis, and may cause fractures from minor trauma due to excitement on handling.

Kornilova, A. L. (1960). [**Contagious catarrh of the respiratory tract in ducks.**]—Veterinariya, Moscow **37**, No. 3 pp. 40-41. [In Russian.] **2669**

A disease similar to that described by Doroshko & Prokof'eva [*V.B.* **29**, 1181] was observed in the Novosibirsk oblast. Bacteriological examinations were negative. Although the disease was transmitted by i/m or intratracheal inj. of unfiltered organ suspensions, it could not be transmitted by the filtrate obtained by passing the same suspensions through a Seitz filter.—R.M.

Shifrine, M., Adler, H. E. & Ousterhout, L. E. (1960). **The pathology of chicks fed histamine.**—Avian Diseases **4**, 12-21. [Authors' summary modified.] **2670**

In chicks fed diets containing histamine the lesions included flaccid internal organs and atrophy of the spleen. These were alleviated when histamine was removed from the diet. The pathology of histamine-fed birds is described. A difference in reaction to histamine was demonstrated between two breeds of chickens.

Snyder, F., Cress, E. A. & Kyker, G. C. (1960). **Rare-earth fatty liver.**—Nature, Lond. **185**, 480-481. **2671**

Stable rare earths of lower atomic number (lanthanum to samarium) produce an acute fatty infiltration of liver which is influenced by hormonal factors. A study of the effect of time on recovery of the rat liver following a 2 mg./kg. dose of stable cerium indicated a maximal increase in liver lipids after 2 to 3 days; 6 days after the injection the liver lipids returned to normal. The cerium content remained at a high level (70% of dose) for from 4 hours to 12 days. There was a significant increase in liver lipids in rats, mice and hamsters but not in rabbits, g.pigs, chickens or dogs.—E.V.L.

Luque, J. M. (1959). La reacción de Popper y de la Huerga (floculación de gamma-globulinas) y sus aplicaciones en la clinica veterinaria. [**Estimation of gamma globulin in serum by turbidimetry and its use in diagnosis of liver disease in animals.**]—An. Inst. Invest. vet., Madrid **9**, 71-83. **2672**

The method used on human sera by Popper, de la Huerga and others [*V.B.* **21**, 1787] was tried on 170 sera from horses, cattle, sheep, pigs and dogs. Values higher than normal were obtained with sera from animals with liver disease.—R.M.

Beltrami, G. (1959). Ostéopathies hypertrophiantes. [**Hypertrophic bone disease in lion and elephant.**]—Rec. Méd. vét. **135**, 721-728. [Summaries in English and Spanish.] **2673**

Study at the Natural History Museum, Marseilles, of the bones of an elephant that had lived in the zoo for 17 years and died in 1903 after fracture of the tibia, revealed anomalies in dentition involving the surrounding bones of the maxilla. Other bones were porous and spongy with massive new formations of osseous material. Similar bony lesions in two lions are described and illustrated. Typically the femur was considerably increased in volume and entirely covered except for the articular surfaces by a calcareous network. Hyper-ostosis was due to general hypertrophy of the bone affecting all its diameters. The lesions were not exostoses but proliferation arising in the body of the bone. The bony shaft resembled a column covered with stalactites or "the massive porous growth of a coral".

The author did not consider that these lesions could be associated with TB.; he ascribed to them a nutritional basis. He likened the changes to a case he had observed of osteopathy in a horse, and to published descriptions of osteoporosis with multiple fractures in middle-aged women.

—R. N. Fiennes.

Bouckaert, J. H. & Said, A. H. (1960). **Fracture healing by vitamin K.**—Nature, Lond. **185**, 849. **2674**

Fractures of the tibia in rabbits treated with vitamin K showed a well-developed periosteal callus and interfragmentary bone in a high degree of mineralization: in controls the periosteal callus was not complete and the space between fractured ends was occupied with tissues poorly mineralized.—E.V.L.

POISONS AND POISONING

Knott, S. G. & McCray, C. W. R. (1959). **Two naturally occurring outbreaks of selenosis in Queensland. [Discussion on paper presented in Brisbane in May.]**—Aust. vet. J. **35,** 332-334. **2675**

For the paper under discussion see *V.B.* **29,** 3956. The absence of significant visceral lesions in affected horses aroused comment: the horses which had been examined P.M. had had no acute symptoms. In America histopathological changes have been reported in heart, lungs, liver and kidneys of cattle and sheep. Three different syndromes of selenosis were outlined: the acute form with rapid death found commonly in sheep; "alkali disease", the chronic form affecting horses, cattle and pigs, and associated with depilation of long hair, coronitis and sloughing of the hooves; "blind staggers" affecting cattle and sheep. It was stated that the lesions varied with the type of selenium compound ingested. In sheep, the acute overnight mortality was due to ingestion of plants containing more than 500 p.p.m. of Se, 90% being in the form of inorganic selenate. "Alkali disease" was due to ingestion of grasses and cereals containing moderate amounts of Se, and "blind staggers" to ingestion of plants which accumulated Se. It was mentioned that the chronic disease in sheep was associated with malformed lambs and changes in the diameter of the wool staple, and that there had been no reports of fleece shedding associated with selenosis. In soil, the presence of sulphur inhibited the uptake of Se, whereas organic debris helped it, and other factors might also be involved; soil analyses were therefore of restricted value. Se had been found in Australian wheats and in appreciable amounts in the livers of normal sheep in N.S.W.

The therapeutic use of selenium in white muscle disease, in hogget ill-thrift, and in vitamin E deficiency in chicks was mentioned, and attention was drawn to the practice of incorporating Se in proprietary licks, which may be dangerous under certain circumstances.—N. WICKHAM.

Halverson, A. W. & Monty, K. J. (1960). **An effect of dietary sulfate on selenium poisoning in the rat.**—J. Nutr. **70,** 100-102. [Authors' summary modified.] **2676**

Dietary sulphate partly restored the growth of rats receiving a purified diet with selenium added as selenite or as selenate. Sodium or potassium sulphates 0·29, 0·58 and 0·87% progressively relieved the growth inhibition due to selenium, but did not substantially prevent liver degeneration.

Monlux, W. S., Johnson, M. J. & Preston, K. S. (1960). **Chronic copper poisoning and pancreatitis in sheep.**—Iowa St. Univ. Vet. **22,** 93-95. [Authors' summary modified.] **2677**

Mineralized salt, containing traces of copper, may cause chronic copper poisoning if excessive amounts of salt are consumed.

The use of flavouring agents, such as anise, to increase salt consumption should be discouraged because some animals consume excessive amounts of the medicated salt.

Necrotic pancreatitis in sheep can be caused by chronic copper poisoning.

Dobai, S. (1960). Beobachtungen und experimentelle Untersuchungen an Schweinen im Zusammenhang mit der Methämoglobinämie. **[Methaemoglobinaemia in pigs caused by excess nitrate in drinking water.]**—Acta vet. Acad. Sci. hung. **10,** 169-182. [In German.] **2678**

An expanded account of work reported at the XVIth International Veterinary Congress [*V.B.* **29,** 3270].—R.M.

Link, R. P. (1960). **Toxic reactions in livestock caused by feeding treated corn.**—Illinois Vet. **3,** 31-32. **2679**

Four calves fed daily a small amount of maize treated with captan and lindane showed acute toxic symptoms on the third day. Severe bloating and permanent atony of the rumen developed in 3 steers fed 10 lb. daily, for 90 days, of maize treated with captan, fumigated 5 times with cyanide and then washed; pigs, however, were unaffected. Washing removed 95% of the captan. No reaction was seen in 3 steers fed maize fumigated twice with cyanide.—M.G.G.

Saleĭ, P. I. (1960). **[Toxicity of granosan (ethylmercuric chloride).]** — Veterinariya, Moscow **37,** No. 3 pp. 58-60. [In Russian.] **2680**

Among 400 pigs 60 died or had to be slaughtered within 5 days of being fed sweepings from a place where this seed dressing had been stored. On another farm losses commenced 50 days after pigs were fed 0·5–1 kg. daily of flour prepared from dressed barley; 37 died and 82 had to be slaughtered. Analysis of organs from a pig that had been killed 10

days after the last meal of contaminated feed revealed a mercury content of 400 mg./100 g. of kidney and 420 mg./100 g. of liver.—R.M.

Caylor, J. F. & Laurent, C. K. (1960). **The effect of a grain fumigant on egg size of White Leghorn hens.**—Poult. Sci. **39**, 216-219. [Authors' summary modified.] **2681**

Oats treated with a fumigant containing carbon tetrachloride, ethylene dichloride, and ethylene dibromide, when fed to laying hens, caused a reduction in egg size. The egg size increased very slowly after withdrawal of the fumigated oats from the diet.

Maize treated with the fumigant also caused reduction in egg size, but it was not so great as in the case of fumigated oats. Since the fumigant is volatile, the gas is apparently trapped under the oat hull, whereas it evaporates freely from maize.

Egg production was affected only when the hens were fed oats treated with 1·5 ml. of fumigant per lb. After four weeks on the fumigated oats the production was down to 37% (compared with 66% for those on the oats fumigated at the 0·5 ml. level).

Barnett, B. D. & Bierer, B. W. (1960). **Failure of chlorinated naphthalenes to produce keratoconjunctivitis in turkeys.** — Avian Diseases **4**, 38-41. [Authors' summary modified.] **2682**

In adult turkeys fed Halowax 1014 (a mixture of tetra-, penta- and hexa-chloronaphthalenes) at levels varying from 2 to 200 p.p.m. of the diet, no lesions resembling vitamin A deficiency or keratoconjunctivitis were observed. The growth rate of poults was reduced by 2, 5 and 20 p.p.m. and poor feathering and reduced feather pigmentation were observed at 20 p.p.m.

Coombe, J. B., Tribe, D. E. & Morrison, J. W. C. (1960). **Some experimental observations on the toxicity of urea to sheep.**—Aust. J. agric. Res. **11**, 247-256. [Authors' summary modified.] **2683**

The rumen pH and ammonia nitrogen levels were recorded in sheep fed urea in different ways. When the urea was sprayed on the daily intake of roughage these levels remained low, even with intakes of 100 g. urea, compared with the levels recorded when smaller amounts of urea (25 g.) were given as a drench. As the rumen pH level rose to 7·0 and above, the periods of time spent ruminating declined until at about a pH of 7·3 complete rumen stasis occurred. The stasis did not occur at higher levels of rumen ammonia nitrogen provided that the pH level was kept down.

Sheep readily consumed large amounts (up to 100 g.) of urea per day provided that the concentration of urea in the ration did not exceed 6%; when this happened food intake was greatly reduced.

A theoretical explanation is offered of the influence of the rumen pH level on the rate of ammonia absorption from the rumen.

Smith, H. A. (1959). **The diagnosis of oak poisoning [Quercus havardi].**—Sthwest. Vet. **13**, 34-36. **2684**

After a study of 25 cases of suspected poisoning in cattle from eating young oak leaves and buds, it was considered that the changes in the kidneys were characteristic. The overall P.M. findings included gastro-enteritis; haemorrhages; oedema; renal changes. Differentiation from mucosal disease is therefore necessary and the renal lesions would seem to do this.

Grossly, the kidneys were enlarged and pale and about two-thirds showed multiple petechial haemorrhages of the peri-renal fat.

Microscopically, the pathognomonic change was a red-staining mass in the proximal convoluted and ascending tubules consisting of disintegrated epithelium and precipitated urinary albumin.—J. H. DARBYSHIRE.

Coleman, R. G., Windrum, G. M. & Hutton, E. M. (1960). **Studies on the toxicity of Indigofera endecaphylla. III. Separation of toxic fractions from seed and herbage.**—J. Nutr. **70**, 267-271. [Authors' summary modified.] **2685**

Potent toxic fractions can be prepared from the seed and herbage extracts by the use of cation-exchange resin columns. The amount of toxic principle in the herbage appears to be less than in the seed.

Murphy, A. M. & Worker, N. A. (1960). **Photosensitivity diseases in New Zealand. XX. The effect of extracts containing the facial-eczema toxin on cells in artificial culture.**—N.Z. J. agric. Res. **3**, 34-40. [Authors' summary modified.] **2686**

The effect of extracts of toxic and non-toxic grass on a range of cultured cells has been investigated. HeLa cells and human amniotic cells growing in serial culture were sensitive to toxic extracts. Amniotic cells in primary culture and g.pig kidney cells in primary culture were apparently unaffected.

HeLa cells were affected also by crude

ether extracts of cultures of *Sporidesmium bakeri*. Partially purified ether extracts were still highly active.

There was a high correlation between toxicity established by g.pig feeding and by HeLa cell tests.

McMeekan, C. P. (1959). **Symposium on facial eczema research. Introduction.**—Proc. N.Z. Soc. Anim. Prod. **19**, 44-47. **2687**

Worker, N. A. (1959). **Biological assays for toxicity.**—Ibid. 59-63. **2688**

Clare, N. T. (1959). **The Beaker test as an indicator of facial eczema toxicity.**—Ibid. 69-76. **2689**

Percival, J. C. (1959). **The association of Sporidesmium with facial eczema.**—Ibid. 77-82. **2690**

Thornton, R. H. (1959). **The identification and culture of Sporidesmium bakeri Syd.**—Ibid. 83-87. Discussion: pp. 87-90. **2691**

These papers, read at the 19th annual conference of the New Zealand Society of Animal Production, discuss the present position of facial eczema research in the light of the finding that the fungus, *Sporidesmium bakeri*, produces a toxin which causes the disease. The history of the investigation of this disease and of the gradual piecing together of information is very well described. Although the source of the toxic substance which causes the disease is now known much further study will be necessary to discover a practical method of control.

Griminger, P. & Donis, O. (1960). **Potency of vitamin K_1 and two analogues in counteracting the effects of dicumarol and sulfaquinoxaline in the chick.**—J. Nutr. **70**, 361-368. [Authors' summary modified.] **2692**

When graded levels of vitamin K_1, menaphthone, or menaphthone sodium bisulphite were added to a vitamin K-deficient diet, 1 mg., 1·15 mg. and 1·45 mg. respectively, per kg. of feed were required to obtain prothrombin times indicating an optimum level of plasma prothrombin.

When the diet contained 0·2% of sulphaquinoxaline, vitamin K_1 (4 mg./kg. diet), as well as the two forms of menaphthone, counteracted most but not all of the hypoprothrombinaemic effect of this drug.

See also abst. **2762** (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Oganesyan, P. A. (1959). **[New treatments for animals.]**—pp. 261 Moscow: Gosudarstvennoe izdatel'stvo sel'skokhoz. literatury 4r. 55k. [In Russian.] **2693**

This book is confined to work done at the Erevan zootechnical veterinary institute on the treatment of diseases of the digestive, respiratory and urinary tracts in horses, cattle and sheep and the pharmacology of drugs acting on these tracts. A technique is described for injecting drugs directly into the omasum by a needle inserted through the chest wall. Naphthalane (decahydronaphthalene) increased the motor and secretory activity of the abomasum, and also the contractions of forestomachs and intestines when given by mouth in doses of 50–100 ml. It was recommended for the treatment of distension and tympany of the rumen.

Poisoning of horses and cattle by dodder (*Cuscuta* spp.) is described on pages 241–247: it occurred when hay contained more than 60% dodder plants. When fed for a long time it caused chronic ulcerative enteritis that could be fatal. Horses given 2·5 kg. of chopped dodder a day died after 30–40 days. Colic was observed between the 20th and 25th days of feeding.

The section on respiratory diseases deals with the uses of eucalyptus, "oxanol" (a benzimidazole derivative) and other topics. That on diseases of the urinary tract describes the use of a mercurial diuretic and barium chloride in cattle.—R.M.

Anon. (1960). **Carcinogenic risks of iron-dextran.**—Brit. med. J. March 12th, 788-789. **2694**

Since the finding that repeated injections of very large amounts of iron-dextran complex induce sarcoma in lab. animals [see *V.B.* **29**, 2881] the product is no longer advertised for human use in Gt. Britain, but continues to be sold and prescribed. Its withdrawal from general use in human beings is urged.

—M.G.G.

Le Nihouannen, J.-C. (1959). Sur l'emploi d'un tranquillisant chez les poulets. **[Use of a tranquillizer, calcium ethyl-2-butanoate, in poultry.]**—Thesis, Lyons pp. 42. **2695**

This substance, also known as calcium

diethylacetate and marketed as "Ethanion" had a sedative action on g.pigs when injected i/p in doses of 0·25 g./kg. body wt. It appeared to be toxic for fowls in doses exceeding 2 g./kg. body wt. [? by mouth]. Given in the drinking water at a concentration equivalent to 0·6 g./kg. body wt. daily to growing birds, it appeared to increase growth rate: 5 birds each weighed 125–150 g. more than 5 untreated birds at the end of 6 weeks. Nephritis caused the death of some birds 3 months after treatment stopped, but the cause was unknown.—R.M.

Turner, A. W. & Hodgetts, V. E. (1960). **Fall in haematocrit in sheep after treatment with chlorpromazine and dihydroergotamine.**—Nature, Lond. **185**, 43-44. **2696**

The number of circulating red blood cells in sheep fell by up to 30% after injection of chlorpromazine or dihydroergotamine i/v or mepazine i/m. That the fall was due mainly to retention of r.b.c. in the spleen was shown by the fall of only 3% in splenectomized sheep, and the increase of gamma ray counts in the splenic region of a sheep previously given r.b.c. marked with ^{51}Cr. An adrenergic-blocking agent "Dibenamine" which has little effect on the c.n.s., caused only a trivial fall. Chlorpromazine inhibited a rise in haematocrit after i/v injection of adrenaline. Relaxation of the spleen appeared, therefore, to be due mainly to tranquillizing effect on the c.n.s.
—M.G.G.

Schotz, M. C. & Recknagel, R. O. (1960). **Effect of carbon tetrachloride on release of free fatty acids by rat adipose tissue.**—Proc. Soc. exp. Biol., N.Y. **103**, 398-400. [Authors' conclusions modified.] **2697**

Administration of epinephrine to rats increased release of free fatty acid from adipose tissue *in vitro*. Administration of carbon tetrachloride had no such effect. These results are not consistent with the hypothesis that carbon tetrachloride administration elicits a supporting adrenal discharge.

Desliens, L. (1959). Imprégnations médicamenteuses des membres sur les animaux: par injections intra-artérielles, par injections intraveineuses rétrogrades. [**Intra-arterial and retrograde intravenous injections into the limbs of animals.**]—Bull. Acad. vét. Fr. **32**, 541-568. Discussion: p. 569. **2698**

Techniques for intra-arterial and retrograde intravenous impregnation in horses, cattle and dogs are described. Examples of therapeutic applications, particularly in diseases affecting the lower limb, are given.
—T.E.G.R.

Tavernor, W. D. (1960). **Clinical observations on the use of trimeprazine tartrate as a sedative and premedicant in horses, cattle, pigs and dogs.**—Vet. Rec. **72**, 317-321. [Author's summary modified.] **2699**

Observations were made on 125 unselected clinical cases (in 36 horses, 14 cattle, 10 pigs, 1 sheep and 64 dogs) in which trimeprazine tartrate was used as a sedative and premedicant agent. T. considered that this drug served a useful purpose. He discussed the indications for its use.

Young, R., Kaplan, H. M. & Kaplan, M. R. (1960). **Chlorpromazine premedication with pentobarbital anesthesia in the turtle.**—Fed. Proc. **19**, No. 1. Part 1 p. 273. [Authors' abst. modified.] **2700**

Adult temperature-adapted turtles of the species *Pseudemys scripta* were readily brought into deep anaesthesia with an i/m inj. of 10 mg./kg. of chlorpromazine hydrochloride followed after 10 min. by an intracardial inj. of 10 mg./kg. of sodium pentobarbitone in aqueous solution. The range of external temp. was 20°–23°C. The total time needed to induce deep (surgical) anaesthesia averaged 15 min. from the start of injection. The average duration of anaesthesia at all depths was 4 hours, and that of deep anaesthesia approx. 3 hours.

Graham, G. R., Hill, D. W. & Nunn, J. F. (1959). **'Supercarbia' in the anaesthetized dog.**—Nature, Lond. **184**, Suppl. No. 14 pp. 1071-1072. **2701**

Concentrations of carbon dioxide could be raised to over 50% without causing respiratory failure in the dog if the following procedure was adopted: CO_2 plus O_2 plus anaesthetic (barbiturate, cyclopropane or fluothane) was inhaled by dogs till the CO_2 concentration was 23–55%, when respiratory arrest would occur (180–440 mm. mercuric arterial CO_2 tension). Convulsions were probably prevented by the presence of anaesthetic. Artificial ventilation was then administered and the CO_2 concentration could be raised to 60–80%, this without anaesthetic, partly to eliminate the effects of the anaesthetic and partly because of the lack of need for it at that CO_2 concentration (arterial CO_2 tension

550–670 mm.). Regular slow spontaneous respiration will be resumed sufficient to maintain full oxygenation of the arterial blood. This can be allowed to go on for over one hour, and the dog can still be returned to normal. Above 80% CO_2 concentration, a lethal state of hypoxia is likely to be reached. —Irene M. Grisedale.

See also absts. **2434** (treatment of experimental staphylococcosis in mice); **2441** (atomic energy as means of disinfection); **2467** (resistance of Salmonella to antibiotics); **2490** (leptospirosis); **2498** (yeasts as cause of mastitis, following penicillin th rapy); **2499** (porcine moniliasis treated with nystatin); **2504** (fungal antigen against ringworm); **2517-2520** (coccidiostatic drugs); **2521** (haemosporidin in equine piroplasmosis); **2523** (theileriasis in cattle); **2533** (disinfection in Aujeszky's disease); **2556** (dietary chlortetracycline in swine fever); **2593 & 2599-2602** (insecticides); **2614-2619** (anthelmintics); **2764** (book, veterinary pharmacology); **2765** (Antibiotics Annual).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Romijn, C. & Lokhorst, W. (1960). **Foetal heat production in the fowls.**—J. Physiol. **150,** 239-249. [Authors' summary modified.] **2702**

A method has been described for carrying out direct and indirect calorimetry in a single egg during incubation. The results obtained agree very closely with the figures calculated from the respiratory metabolism (indirect calorimetry).

The respiratory quotient and the calorific quotient have been calculated for each day of development and the results discussed in comparison with figures from other authors.

Drummond, G. I. & Stern, J. R. (1960). **Enzymes of ketone body metabolism. II. Properties of an acetoacetate-synthesizing enzyme prepared from ox liver.**—J. biol. Chem. **235,** 318-325. **2703**

An enzyme (or enzyme system) from fresh ox liver catalysed synthesis of acetoacetate from acetoacetyl coenzyme A or acetyl coenzyme A without added thiol or magnesium ions.—R.M.

Andresen, E. & Irwin, M. R. (1959). **The E blood group system of the pig. I.**—Nord. Vet-Med. **11,** 540-547. **2704**

Andresen, E. & Wroblewski, A. (1959). **The E blood group system of the pig. II.**—Ibid. 548-558. [In English. Summaries in German and Danish.] **2705**

I & II. Studies on Danish, American and Polish pigs showed that the E group contained three factors labelled a, b and e. The genetics of the system was described.—R.M.

Kolin, A. (1959). **Electromagnetic blood flow meters. Implantable flow transducers facilitate circulatory studies in conscious and free-moving animals.**—Science **130,** 1088-1097. **2706**

A description of techniques for measuring the blood flow in vessels of various diameter, with emphasis on those which allow the animal free movement throughout the test. —Joyce E. Hammant.

Bieniarz, J. & Reynolds, S. R. M. (1960). **Hemodynamic changes in the ewe affecting fetal heart rate in utero.**—Amer. J. Physiol. **198,** 128-134. **2707**

Factors that cause bradycardia in foetal lambs, such as respiratory anoxia and section of the vagus nerve of the ewe, were investigated and the mode of action of these factors was discussed.—R.M.

Bredeck, H. E. (1960). **Intraventricular blood pressures in the chicken.**—Amer. J. Physiol. **198,** 153-154. **2708**

Measurements made by heart puncture in unanaesthetized pullets and hens gave an average systolic pressure in the left ventricle of 144 mm. Hg and in the right ventricle 26 mm. Hg.—R.M.

Weissman, S. M., Waldmann, T. A. & Berlin, N. I. (1960). **Quantitative measurement of erythropoiesis in the dog.**—Amer. J. Physiol. **198,** 183-186. **2709**

The average total volume of erythrocytes was 39 ml./kg. wt. and their average life (measured with the aid of glycine labelled with radio-carbon) was 108 days.—R.M.

Gurubatham, S. & Scott, P. P. (1960). **Haemoglobin concentration and total haemoglobin in normal kittens.**—J. Physiol. **150,** No. 1 pp. 7P-8P of Proceedings. **2710**

Hb concentration in kittens was about 17 g.% at birth, 6–7 g.% at 3–5 weeks, and 11 g.% at 10 weeks. Since packed cell volume followed a similar course, the corpuscular Hb remained fairly constant at about 36·7%. In spite of a progressive fall in Hb concentration and in Hb per unit of body wt., total Hb remained constant until the third week, when a slight rise was observed. At 5 weeks total Hb was more than double that at birth. From 2–6 months the proportion of Hb to other tissues was constant at about 0·56 g. per 100 g. body wt.—M.G.G.

I. Kraft, H. (1960). Über das Geschlechtschromatin am Ruhekern von Leukozyten der

Säugetiere. **[Sex chromatin in the resting nucleus of mammalian leucocytes.]**—Blut **6,** 18-25. [Summary in English.] **2711**

II. Reutsch, K. J., Brüschke, G. & Schulz, F. H. (1960). Über morphologische Geschlechtsunterschiede an den Kernen von neutrophilen Granulozyten bei Tieren. **[Sex differences in the nuclei of neutrophile leucocytes of animals.]**—Dtsch. Gesundheitswes. **15,** 240-243. **2712**

I. K. examined blood smears from 600 mammals of 23 species, including 48 cattle, 10 sheep, 23 pigs, 380 dogs and 30 cats. The "drumstick" appendages characteristic of female cells occurred in all female animals (except chinchillas) in more than 3% of neutrophile leucocytes. In cats they also occurred in the blood of one male and one castrate.

II. Typical "drumstick" appendages were seen in the nuclei of neutrophiles of female horses, pigs, dogs, cats, monkeys and rabbits; they were relatively common in rabbits, rare in cats. They occurred in both sexes of white mice and g.pigs, and were not seen at all in female goats, cattle, fowls and ducks. The number of each species examined was small. There are two plates of illustrations.—R.M.

I. Möller, G. (1959). Mast- und Plasmazellen in der Leber des Schweines. **[Mast cells and plasma cells in the liver of pigs.]** — Inaug. Diss., Hanover pp. 28. **2713**

II. Kirsch, R. (1959). Über das Vorkommen von Mastzellen in der Lunge bei Rind und Hund. **[Mast cells in the lungs of cattle and dogs.]**—Inaug. Diss., Hanover pp. 20. **2714**

I. Only small numbers of mast cells were present in the liver of young pigs. Between 13 and 17 months of age the numbers increased twentyfold. Chronic inflammation was accompanied by great increase in the number of mast cells. Plasma cells were not seen in any liver.

II. In cattle the number of mast cells in lung tissue increased with age, but this was not noticed in dogs. Morphological variations in the cells of cattle and dogs were described. —R.M.

Botha, G. S. M. (1959). **Oesophageal pressure and motility in animals: a cine-radiographic and manometric study.**—S. Afr. med. J. **33,** 915-920. **2715**

The authors described the techniques they used in these studies on rabbits, monkeys, mice, cats, ferrets, g.pigs and dogs. Similar patterns for gastro-oesophageal and oesophageal-pharyngeal withdrawal curves, deglutition complexes and intraluminal pressure changes were found in each species. Functional, if not structural, sphincters were found to exist at the cranial and caudal ends of the oesophagus. —Joyce E. Hammant.

Flatt, W. P., Warner, R. G. & Loosli, J. K. (1959). **Evaluation of several techniques used in the study of developing rumen function.** —Mem. Cornell agric. Exp. Sta. No. 361 pp. 31. **2716**

The effects of different diets were studied on 47 calves, 25 of which were fistulated. The experimental period lasted 12 weeks, beginning when the calves were 3 weeks old. The fistulation resulted in lower food intake and retarded growth but did not affect rumen papillary development or reticulo-rumen growth. The volume of the reticulo-rumen in these calves, found by measuring the volume of water required to fill the rumen, was shown to increase at the same rate as body weight when milk was fed. Hay, grain and rumen ingesta caused greater development of the rumen papilla and stomach tissue but this was not the case when inert roughage was introduced. Similarly pure solutions of fatty acids and diets of milk with mineral and vitamin D supplements failed to stimulate increased growth; the effect of rumen liquor was variable. It was suggested that the physical nature and bulk supplied by roughage material did not stimulate rumen development, but that products of the break-down of feeds by micro-organisms were a major factor. —Joyce E. Hammant.

Kano, Y. & Wakuri, H. (1959). **[Hairs found on the skeleton of the dog.]**—Bull. Azabu vet. Coll., Japan No. 6 pp. 59-73. [In Japanese. Summary in English.] **2717**

Hairs were found growing on the surfaces of most bones in the body of a mongrel dog aged 4 months, one of 102 killed for making anatomical specimens. The hairs had normal hair structure. The shafts appeared to penetrate compact bone and to have their origin in spongy bone.—R.M.

Asdell, S. A. (1960). **Growth in the bovine Graafian follicle.**—Cornell Vet. **50,** 3-9. [Author's summary modified.] **2718**

Development follows the usual mammalian pattern. Histological evidence indicated high oestrogen activity in the accessory tract at about 8 to 10 days after oestrus. Immediately before the follicle ruptures it collapses

slightly. Thus the view that the immediate cause of ovulation is increased intrafollicular tension needs to be reconsidered.

Lindhé, B. & Sperber, I. (1959). **A note on the structure of rumen epithelium.**—K. LandtbrHögsk. Ann. **25**, 321-325. 2719

The mucosa of tongue-like papillae from the rumen of a sheep and young goat were studied by electron microscopy. The basal cells had numerous mitochondria distal to the basal nucleus, and finger-like processes extending into the basement membrane. The intermediate and surface cells had more fibrils, arranged perpendicular to the surface of the papillae and large vacuoles about the nuclei. Intercellular spaces were conspicuous and these were interrupted by intercellular bridges formed by the meeting of processes from neighbouring cells. The similarity of the structure to mammalian skin was noted. It was suggested that the wide intercellular spaces were associated with ion transportation.

—Joyce E. Hammant.

Talanti, S. & Kivalo, E. (1960). **Studies on the subcommissural organ of some ruminants.**—Anat. Anz. **108**, 53-59. [In English. Authors' summary modified.] 2720

The structure of the subcommissural organ of the sheep, goat, llama and elk was studied. Hypendymal ducts previously described in the cow [see *V.B.* **29**, 1929] were observed in all animals. The ependymal cells and parietal cells of these ducts contained a granular substance staining with aldehyde-fuchsin, which occurred also in the lumina of the ducts and on the surface of the organ. The substance is thought to be either a secretion of the organ or the carrier of a secretion.

Riis, P. M., Luick, J. R. & Kleiber, M. (1960). **Role of plasma lipids in transport of fatty acids for butterfat formation.**—Amer. J. Physiol. **198**, 45-47. 2721

Experiments on cows, using radio-carbon, indicated that half the carbon in butter-fat originated from plasma lipids.—R.M.

Johnson, P. & Pierce, A. E. (1959). **Ultracentrifugal and electrophoretic studies on neonatal calf sera and maternal colostrum.**—J. Hyg., Camb. **57**, 309-320. 2722

Blood samples were collected from calves at intervals during the first week of life and thereafter once a week. Protein fractions were measured by means of their sedimentation constants and by electrophoretic separation. Some of the calves were deprived of colostrum. This paper is mainly concerned with a comparison of the results of ultracentrifugation and electrophoresis. There was some doubt that colostral proteins ingested in normal amounts were all absorbed from the intestine.—R.M.

Kojima, Y. (1959). **Paper-electrophoretic studies on the protein fractions of bovine serum collected at regular intervals.**—Jap. J. vet. Res. **7**, 246-257. [In English.] [Author's summary modified.] 2723

The protein fractions were determined in blood collected from 3 cows at 3-day intervals over 2 months. The data obtained failed to show any significant variation. But variations of total protein value during the sexual cycle were moderately significant; a slight decrease occurred in 2 cows at the middle of the cycle.

Fisher, E. W. (1960). **The concentration of some of the inorganic constituents in the plasma of healthy Ayrshire cattle.**—Brit. J. Nutr. **14**, 9-12. [Author's summary modified.] 2724

Mean concentrations in the plasma of adult cows were: Na 142·2, K 4·4, Ca 5, Mg 1·46 and Cl 103·3 m-equiv./litre.

The plasma of the calves showed a higher conc. of K (5·1 m-equiv./l.), lower concentrations of Cl (100·3) and Mg (1·14).

Significant differences were not detected for any constituent in the plasma of lactating compared with dry cows or of pregnant compared with non-pregnant cows, with the exception of magnesium, for which a difference was found between pregnant lactating and non-pregnant lactating cows.

Clark, R. (1959). **A study of the plasma sodium and potassium levels in normal Merino sheep.**—Onderstepoort J. vet. Res. **28**, 229-235. [Author's summary modified.] 2725

Determinations of 500 plasma samples revealed that plasma sodium ranged from 132–156 m.eq./litre with 90% of samples between 138 and 150; plasma potassium ranged from 3·8–6 m.eq./litre with 90% of samples between 4·1 and 5·5. No differences could be found due to sex, season, salt dosing (on a basic diet of lucerne hay) or starvation for 96 hours. Administration of corticotrophin caused retention of Na and K but had no effect on plasma content because of concomitant water retention.

Campbell, E. A. (1960). **Changes in plasma iron, haemoglobin and plasma proteins, in immature pullets, resulting from simultaneous**

administration of (A) oestrogen and thyroxine, (B) oestrogen and sulphamethazine.—Poult. Sci. **39**, 140-144. [Author's summary modified.] **2726**

Thyroxine given at the level of 1 mg./day inhibited the changes in the haemoglobin and serum iron produced by oestrogen.

Sulphadimidine 0·2% in the feed potentiated the effect of oestrogen.

The rise in serum protein following oestrogen administration was accompanied by a lowering of serum albumin and increases in the beta and gamma globulin fraction. These effects were inhibited by thyroxine and potentiated by sulphadimidine.

Huntsman, R. G., Hurn, B. A. L. & Lehmann, H. (1960). **Paradoxical effect of magnesium ions on blood coagulation.**—Nature, Lond. **185**, 852. **2727**

Magnesium ions inhibited blood clotting when the blood contained 5 m.equiv. calcium ions a litre, but accelerated clotting when only 2 m.equiv. Ca were present.—R.M.

Kovács, G. S. & Tárnoky, K. E. (1960). **A simple and rapid method for the simultaneous determination of calcium and magnesium from the same sample of blood serum.**—J. clin. Path. **13**, 160-162. [Authors' summary modified.] **2728**

Serum calcium and magnesium were titrated by using the dye "plasmocorinth B" as indicator. Both determinations can be carried out from the same 0·5 ml. sample. The method is in good agreement with established methods.

Hansen, O. (1960). **A micromethod for simultaneous determination of glucose and ketone bodies in blood and glycogen and ketone bodies in liver.**—Scand. J. clin. Lab. Invest. **12**, 18-24. [In English.] **2729**

After determination of glucose by the anthronone method of J. H. Roe (1955), the same test fluid was used for determination of ketone bodies by means of the reagent acetone-2, 4-dinitrophenylhydrazine. Only 0·025–0·2 ml. of blood or 25–50 mg. liver was required for the test.—R.M.

Lin, T. M., Kaivinen, E. & Ivy, A. C. (1960). **Effect of stearic acid and cholesterol on biosynthesis of sterol by the chicken liver.**—Amer. J. Physiol. **198**, 29-32. **2730**

In chicks fed a ration containing 10% stearic acid, synthesis in the liver of cholesterol from acetate was greatly increased. A diet containing 2·5% cholesterol inhibited synthesis of cholesterol in the liver—R.M.

Soliman, F. A. (1959). **The anterior pituitary-like activity of rumen contents.**—Nature, Lond. **184**, Suppl. No. 22. pp. 1723-1724. **2731**

Hormonal activity of gonadotrophic, adrenocorticotrophic and thyrotrophic nature was demonstrated in acetone extracts of rumen fluid from cows, buffaloes and sheep and of cultures of *Diplodinium ecaudatum*, *Lactobacillus acidophilus* and *Escherichia coli*. The test animals were male baby chicks and immature male and female mice.—M.G.G.

Taylor, T. G., Moore, J. H. & Hertelendy, F. (1960). **Variations in the mineral composition of individual bones of the skeleton of the domestic fowl.**—Brit. J. Nutr. **14**, 49-57. [Authors' summary modified.] **2732**

The bones fell into two categories on the basis of their citric-acid content, one containing more than 2% citric acid in the calculated ash (ribs, sternum, skull, toes, ilium and ischium) and the other containing less than 2% (wing and leg bones, coracoid, scapula and cervical vertebrae).

No consistent differences between the Ca, P, Mg, and Na contents of individual bones were observed, but, with the exception of toes, the high-citrate bones tended to be richer in K than the low-citrate bones.

Onset of reproductive activity was associated with increases in the Na and CO_2 and decreases in the Mg and P contents of the skeleton, but no changes were observed in the bone citric acid.

The mean plasma content of citric acid fell from 8·3 mg./100 ml. to 2·8 when ovarian activity began.

It is suggested that the changes in bone composition associated with the onset of reproductive activity were due primarily to the decrease in the $P:CO_2$ ratio of the blood which occurs at this time, and that all the constituent ions of bone minerals investigated are in equilibrium with the blood with the exception of the citrate.

See also abst. **2766** (book, veterinary anatomy).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Migicovsky, B. B. (1959). **Removal of strontium and cesium from milk.**—Canad. J. Biochem. Physiol. **37**, 1287-1292. 2733

A cation exchange resin saturated with calcium and stirred in milk will remove radioactive strontium. Such treatment will result in an increased calcium content but tends to reduce the sodium and potassium content of the milk. Successive treatments enhance the efficacy of the strontium removal.

A resin equilibrated with a solution of calcium, potassium and sodium in which the cation ratio is the same as in milk is also efficient for the removal of strontium and caesium and will not alter the cation composition of milk.

This indicates a means by which strontium and caesium may be removed from milk but further investigation is required to determine whether the process could be placed on a commercial basis.—R. V. L. WALKER.

Fetner, R. H. & Carter, R. W. (1960). **Reduction of the radioactive content of milk by a feeding procedure.**—Nature, Lond. **185**, 858. 2734

There are to-day commercially-available 'grass incubators', which germinate various grains. The product is fed after 6 days' incubation as a substitute for fresh pasturage. The radioactive content of milk from cows on this diet was investigated by comparing the counts of caesium 137 and potassium 40 with that of milk from control cows on pasture, both groups receiving additionally their usual hay and grain diet. The caesium 137 counts were significantly lower than those of the controls with an average reduction of 38%. The potassium 40 counts were significantly different only in the first and third of 7 weekly samples, and failed to show a consistent trend.—E.V.L.

Cornfold, S. J., Blount, W. P., Eggitt, P. W. R. & Coppock, J. B. M. (1960). **Study of the quality of free-range and laying battery hen eggs with particular reference to baking.**—J. Sci. Fd Agric. **11**, 115-121. [Authors' abst. modified.] 2735

A series of tests over a period of 5 months of the general quality and baking properties of eggs showed that, apart from paler colour of yolks from battery hens, only small differencies in other properties, of no commercial importance, could be detected with eggs from free-range hens of the same parent stock.

See also abst. 2474 (incidence of brucellosis in veterinary and agricultural personnel in Poland).

LIVESTOCK HYGIENE

Grigov'eva, A. Y. (1959). **[Physiological state and productivity of cows under conditions of loose housing.]**—Veterinariya, Moscow **36**, No. 12 pp. 59-62. [In Russian.] 2736

Cattle kept in covered yards suffered less illness in general (but more traumatic injuries) than cattle kept in ordinary stalls on the same farm. Bone density, fat content of milk, and blood composition were superior in cows kept in yards.—R.M.

Lau, K. K. & Harrison, J. L. (1960). **An animal house in the tropics.**—J. Anim. Tech. Ass. **10**, 150-159. 2737

A brief account is given of the development of the Institute for Medical Research in Kuala Lumpur and the organization of animal production as a single unit which has grown up during the last decade. Species of animals maintained are buffaloes, mice, rats, golden hamsters, g.pigs and rabbits. A description is given of the equipment used, the various animal houses, foods and feeding routines and breeding systems for the different species of animals.—T.E.G.R.

Köves, J. & Zakar, P. (1960). Über die Unschädlichkeit des Asphalts als Bodenbelag in Ställen. **[Safety of asphalt floors in animal stalls.]**—Acta vet. Acad. Sci. hung. **10**, 13-22. [In German.] 2738

From the results of feeding bitumen of 3 different origins to pigs for a period of 71 days, the authors concluded that asphalt floors have no harmful effects.—E.V.L.

REPRODUCTION AND REPRODUCTIVE DISORDERS

Morrant, A. J. & Dun, R. B. (1960). **Artificial insemination of sheep. II. Techniques and equipment used at Trangie Agricultural Experiment Station.**—Aust. vet. J. **36**, 1-7. [Authors' summary modified.] 2739

Technique and equipment for the mating

of 1,000 experimental sheep annually are described. The techniques of oestrus detection and flock management, semen collection and insemination are given in detail. Equipment for semen collection and insemination is illustrated and described.

Some results of artificial mating are presented and the applications of artificial insemination in the Australian sheep industry are discussed.

Lindner, H. R. (1960). **Androgens in spermatic vein blood of farm animals.**—J. Endocrin. **20,** No. 1 pp. v–vi of Proceedings. **2740**

It has been demonstrated that the spermatic vein blood of stallion, boar, ram and bull contains testosterone and also smaller amounts of androst-4-ene 3 : 17-dione (androstenedione); neither of these two steroids could be detected in the arterial or peripheral venous blood. In the immature bull calf the spermatic vein blood contained a higher proportion of androstenedione.—R.M.

I. Martin, E. & Garcia, D. R. (1959). Importancia de la retención de placenta en relación con otras enfermedades de las vacas de leche. **[Incidence of retained placenta in relation to other diseases of milch cows.]**—An. Inst. Invest. vet., Madrid **9,** 251-261. **2741**

II. Martin, E. & Rodriguez, M. A. (1959). Estudio sobre la proporción existente entre las distintas enfermedades del aparato genital en las vacas lecheras. **[Relative incidence of diseases of the genital system of milch cows.]**—Ibid. 263-268. **2742**

I & II. Data were collected from 2,400 cows in 121 herds in the Madrid area over four years. During the period one-third of the cows had gynaecological disorders and 63% of the disorders were retained placenta (536 cases). The remainder included metritis 9·2%, persistent corpus luteum 8·8%, nymphomania 7·6%, uterine prolapse 0·68%, vaginitis 0·27%. —R.M.

Wagner, E. (1960). Der Einfluss von Aureomycin-Obletten auf Gesundung und Leistung von Kühen mit Nachgeburtsverhaltung. **[Influence of chlortetracycline on health and performance in cows with retained placenta.]**—Tierärztl. Umsch. **15,** 22-25. **2743**

32 cows after complete manual removal of the retained placenta had chlortetracycline 0·5 or 1 g. placed in the uterus and were served at first heat. 24 cows in which some placenta was left attached in the tips of the horns received 1 g.: 18 of these held to first service; 4 received chlortetracycline suspensions later and conceived after returning twice; 2 remained infertile. 16 cows from which the placenta could not be removed manually were given 1 g. chlortetracycline two days after calving, repeated on the 4th and again between the 6th–10th days. These cows did not lose weight nor did their milk yield decline. All 9 followed-up cases conceived subsequently. Of 10 cows which aborted in the 7th–8th month and showed systemic symptoms, all were treated as in the previous group, 8 with parenteral sulphadimidine in addition. All were feeding normally after 10 days and 5 subsequently became pregnant after further chlortetracycline treatment 6 weeks after calving.—F. L. M. Dawson.

Cupps, P. T., Laben, R. C. & Mead, S. W. (1959). **Histology of pituitary, adrenal, and reproductive organs in normal cattle and cattle with lowered reproductive efficiency.**—Hilgardia **29,** 383-410. **2744**

Changes in the small basophilic (delta) cells of the pituitary were found to be related to the growth of the follicle, early development of the corpus luteum and spermatogenesis. Their activity was also associated with the degree of activity of the adrenal fascicular cells. Maturation of the follicle resulted in growth of the theca interna and the corpus luteum developed both from here and the granulosa. In cows with low fertility and those with nymphomania the adrenal cortex was wider than normal and in the former uterine glands were modified. Sterile bulls with normal libido had a low spermatozoa count with a high incidence of abnormality, hypoplasia of the testes, small adrenals and degenerative delta cells. Bulls with adrenal fascicular tumours or increased width of the zona fasciculata had semen with a low fructose titre. Spermatozoa counts showed individual variation. Another group of bulls exhibited complete tubular degeneration. It was concluded that lowered fertility is associated with several different conditions in different organs.—Joyce E. Hammant.

Hutt, F. B. (1960). **Sex-linked dwarfism in the fowl.**—Heredity **50,** 209-220. **2745**

A description of sex-linked recessive dwarfism resulting in a weight reduction of 43% in homozygous cocks and 26–32% in hemizygous hens. At hatching chicks appear to be of normal size. Viability, fertility and hatchability are apparently not affected.—E.G.

Julian, R. J. (1960). **Ichthyosis congenita in cattle.**—Vet. Med. **55**, No. 3 pp. 35-41. [Author's summary modified.] **2746**

A condition in calves in Ontario did not appear to be foetal ichthyosis which occurs in cattle and man and which results in death in a few hours or days. The condition reported here which is present at birth, but does not necessarily result in death, can be called congenital ichthyosis.

Ashton, G. C. (1959). **β-Globulin alleles in some zebu cattle.**—Nature, Lond. **184**, 1135-1136. **2747**

Two new beta-globulin alleles (B and F) are reported in breeds of *Bos indicus*. They were distinguished from the A, D and E alleles by the mobility of their components in starch-gel electrophoresis. The frequency of each of the 5 alleles is given in several breeds and crossbreeds of zebu and British breeds of cattle. Of the 15 phenotypes that can be expected from the 5 alleles, all except B/B have been found. The high frequency of the E allele in all zebu breeds may be connected with their climatic tolerance.—M.G.G.

See also abstr. **2465** (abortion by E. coli endotoxin); **2493-2494** (V. fetus abortion); **2581** (hedgehogs as disseminators of ovine abortion virus).

TECHNIQUE AND APPARATUS

Hofmeyr, C. F. B. & Fitzpatrick, R. J. (1959). **The technique of adrenalectomy in the sheep.**—Onderstepoort J. vet. Res. **28**, 257-262. [Authors' conclusions.] **2748**

A technique for removal of the adrenal glands in sheep is described; the difficulties associated with the anatomy of the right adrenal gland are emphasised.

Pickett, J. P. & Sommer, J. R. (1960). **Thirty-five mm. film as mounting base and plastic spray as cover glass for histologic sections.**—Arch. Path. **69**, 239-247. [Authors' summary modified.] **2749**

A new method for mounting histological sections employed 35 mm. film as a base and a plastic spray instead of glass slides and glass cover slips.

The method was cheap and it saved time and storage space. It was particularly applicable to serial sections and routine work.

Rosenberg, A. J. & Rude, F. R. (1959). **Short cuts in hematology.**—J. Amer. vet. med. Ass. **135**, 506. **2750**

A suggestion is made that cartridge-needle units be substituted for syringe, needle and blood storage vial to obtain and store blood samples. The unit would then be discarded after use and hence save cleaning time. Other time-saving hints were given for washing slides and pipettes and fitting the haemocytometer.—JOYCE E. HAMMANT.

Balla, L. (1960). Blutentnahme durch Herzpunktion von Hühnern und Küken. **[Collection of blood from fowls and chicks by heart puncture.]**—Acta vet. Acad. Sci. hung. **10**, 60-68. [In German.] **2751**

The method described is reliable and relatively safe for the collection of blood by heart puncture from day-old chicks and older birds. The essential part of the method is the inward and forward introduction of the needle into the left side of the bend of the U-shaped sternal incisure, in the case of fowls in the direction of the contralateral shoulder joint, and in chicks at an angle of 45° to the wall of the thorax.—E.V.L.

Macgregor, J. D. (1960). **Insertion of intravenous catheter.** — Lancet, March 5th, 528. **2752**

A nylon catheter of 0·5 mm. bore is inserted into the lumen of a needle through a slot in the shaft, and passed to within 1 mm. of the needle point. A short length of nylon suture material in the catheter acts as a stylet. When the needle has been inserted into a vein, the catheter is pushed further into the vein, which is then decompressed, and the stylet is withdrawn. Infusion is begun, and the needle removed.—M.G.G.

Chandler, A. B. (1960). **Sedimentation of blood without anticoagulants.**—Nature, Lond. **185**, 697-698. **2753**

Human venous blood drawn into a polyvinyl plastic tube which was then clamped did not clot for 1½–2 hours if the first 2 ml. of blood, containing tissue thromboplastin, were discarded, and all metal surfaces were coated with silicone.—M.G.G.

Fussell, M. H. (1960). **Collection of urine and faeces from the chicken.**—Nature, Lond. **185**, 332-333. **2754**

A surgical technique is described whereby it is possible to collect samples of faeces and urine from fowls during long-term experi-

ments. These birds maintained their live weight and egg laying performance.
—W. E. PARISH.

Payne, L. C. (1960). **Simple telemetering system for signaling high rumen pressures.**—Science, **131**, 611-612. [Author's summary modified.] **2755**

The construction of a modified Hartley oscillator transmitter activated through a pressure switch is described. When this is placed within the rumen of a cow which is allowed unrestricted movement in the pasture, frequency-modulation signals are transmitted to a recording receiver whenever a preselected pressure is exceeded.

Van Arsdel, W. C., Krueger, H. & Bogart, R. (1959). **Lead selection, cardiac axes, and interpretation of electrocardiograms in beef cattle.**—Tech. Bull. Ore. agric. Exp. Sta. No. 51 pp. 63. **2756**

On one calf 67 different combinations of leads were tried. Electrocardiograms were also obtained from 33 beef calves using 7 different leads. Results are presented in detail.—R.M.

Trainor, D. C. Foskett, W. E. & Larsen, L. F. (1960). **Radiological hazards in veterinary practice.**—Aust. vet. J. **36**, 8-13. [Authors' summary modified.] **2757**

Radiological methods used at a number of veterinary practices have been studied and compared with those in use at the School of Veterinary Science at the University of Sydney. The possible exposure of the operator to radiation has been estimated. It was concluded that there is need for improvement in techniques and recommendations were made of precautions to be taken.

See also absts. **2488-2489** (isolation and culture of leptospira); **2509** (collection of airborne microorganisms).

MISCELLANEOUS

Pobisch, R. & Arbeiter, K. (1959). Untersuchungen über die Verwendung der Röntgenstrahlen zur Kastration der weiblichen Hauskatze. **[Use of X-rays for spaying female cats.]**—Wein. tierärztl. Mschr. **46**, 763-789. [Summaries in English, French and Italian.] **2758**

Six female cats received fractionated doses of 3,000–3,900 r. The method described was neither safe nor reliable. Except in one cat, general health was unaffected, but a certain amount of kidney damage, particularly to the left kidney, was unavoidable. The coat in the areas concerned was also affected. Details of the histology of the lesions are given. The results of X-ray treatment of human ovaries are briefly reviewed.
—IRENE M. GRISEDALE.

Cortez, P. R. (1959). Situación actual de la ganadería del Estado Bolívar y sus relaciones con la explotación del hierro. **[Present position of livestock in the State of Bolívar, Venezuela.]**—Rev. vet. venez. **7**, 265-305 & 331-365. **2759**

C. described geography, climate and land use in the State of Bolívar (92,000 sq. miles) and discussed the possibility of developing the livestock industry. There is a list of fodder plants and the main diseases of horses, cattle, pigs and poultry.—R.M.

REPORTS

Canada. (1959). **Report of the Veterinary Director General for the year ended March 31, 1958.** [Wells, K. F.] pp. 39. Ottawa: Queen's Printers. **2760**

The Contagious Diseases Section reports that no new serious animal diseases appeared in Canada during the year. RABIES in predatory animals continues to be serious but control measures have been adequate to confine the outbreaks and prevent establishment of infection in dogs. Some 93% of the cattle population has been tested in the TUBERCULOSIS eradication programme. The introduction of a BRUCELLOSIS control scheme has been favourably received by the livestock industry and testing is well under way.

Growing demand by foreign countries for wholesome meat and meat products is reflected in the increased volume of export from the various Canadian establishments reported by the Meat Inspection Section. Inspected slaughtering increased by over 50% from the previous year, the greatest increase being in poultry (79·03%), followed by pigs (5·57%), sheep (4·53%) and cattle 4·39%).

The former Division of Animal Patho-

logy has now become a Section of the Health of Animals Division to meet the demands for services in the regulatory and meat inspection fields. In addition to its research activities, the Section provides a consulting and advisory service together with a routine diagnostic service including blood testing for the Federal Brucellosis Control scheme. Biological products produced include mallein, tuberculin, johnin and the brucella antigens for regular use throughout the Dominion.

—R. V. L. WALKER.

Canada, (1959). **Province of Saskatchewan. Eighth annual report of the Director of the Animal Industry Branch, being an extract from the annual report of the department of agriculture of Saskatchewan, for the twelve months ended March 31st, 1959.** [Brockelbank, E. E.] pp. 60. Regina, Saskatchewan: Lawrence Amon. [Veterinary division pp. 49-60, V. E. Senior.] **2761**

The report of the Veterinary Division describes in detail the BRUCELLOSIS control scheme of the province which has now been superseded by the Federal Control programme. Mention is also made of the continuous progress in the calfhood vaccination campaign. Reference is made to the increase in active operation of the Veterinary Service Districts and the scholarship plan inaugurated for veterinary students.

The activities of the professional staff in the field and laboratory are described in the provision of a consulting and diagnostic service and maintaining close liaison with the various agricultural agencies.

The report concludes with a review of the disease investigational work in the province and lists the numerous animal and poultry diseases encountered during the year under review.—R. V. L. WALKER.

Australia. (1959). **Northern Territory Administration. Animal Industry Branch. Thirteenth annual report 1958-1959. (Covering activities for the year ending 30/6/1959).** pp. 50. Alice Springs: Animal Industry Branch. **2762**

The incidence of bovine TUBERCULOSIS in the Alice Springs area was negligible but in 6,472 cattle slaughtered at Darwin 3·37% were infected. Up to 9% of infected cattle were found in some mobs sent into Queensland. Of 1,373 pigs killed at Darwin 8% were infected with TB. Some of the cases were in feral pigs caught in neighbouring swampy areas and fattened for market. A survey of the incidence in the feral pigs revealed 24 infected out of 27. Three groups of tamed buffaloes were examined and the incidence was 26·5% in 143 animals. No reactors were found in dairy herds supplying Darwin.

There was an unconfirmed report of PASTEURELLOSIS in cattle. A few cattle developed PNEUMONIA in ships taking them to south-east Asia but responded to treatment with antibiotics.

There were a few outbreaks of BOVINE CONTAGIOUS PLEUROPNEUMONIA, but the Central Australia protected area remained free. There have not been any cases in the area for four years and the regulations of the Victorian Stock Diseases Act have now been amended so that cattle from the area may enter Victoria. Surveys were conducted on behalf of a committee of the Commonwealth appointed to consider control and eradication of the disease. Investigations included trials of the viability of the vaccine, whole blood slide agglutination, incidence in buffaloes (no cases found in 125 animals examined by c.f. test).

There was one outbreak of BABESIOSIS in a travelling mob, with 20 deaths.

One outbreak of EPHEMERAL FEVER was seen.

BUFFALO FLY (*Siphona exigua*) was prevalent in the northern regions.

Heavy infestations with *Boophilus microplus* occurred in the northern parts of the Territory and engorged ticks were found on two buffaloes. Studies on survival of larval ticks began.

OSTEOMALACIA and BOTULISM were widespread in areas affected by drought. Some typical cases of "peg-leg" (OSTEOMALACIA) were seen in buffaloes. Some properties have adopted large-scale vaccination against botulism in cattle.

A heavy loss (28 of 29 horses) occurred from BIRDSVILLE DISEASE. Preliminary feeding trials with *Indigofera enneaphylla* showed that lucerne hay, and to a less extent vitamin E, will protect horses against the toxic effects. Studies on blood and tissues showed that there was no absolute deficiency of vitamin E.

A heavy loss of horses occurred from KIMBERLEY HORSE DISEASE when the animals consumed regrowth of *Crotalaria retusa*.

Severe losses occurred from GEORGINA RIVER DISEASE in cattle but staff shortages prevented further investigations on the toxicity of the Gidyea trees which contain the

toxic principle. Examination of blood and liver Cu values showed that ingestion of *Acacia georginae* (Gidyea) does not induce an absolute Cu deficiency.

The following plants were associated with poisoning of animals:—*Sarcostemma australe, Duboisia hopwoodii, Gastrolobium grandiflorum, Acacia georginae, Portulaca filifolia, P. oleracea, Erythrina vespertilio.*

—H. McL. Gordon.

BOOK REVIEWS

Zeissler, J., Krauspe, C. & Rassfeld-Sternberg, L. (1960). Die Gasödeme des Menschen. Band II. Pathologie, pathologische Anatomie und Histologie, Pathogenese, Diagnose und Therapie, Literatur. **[Clostridial infections of human beings. Volume 2. Pathology, histology, pathogenesis, diagnosis and treatment.]** pp. vii+373. Darmstadt: Dr. Dietrich Steinkopff Verlag. **2763**

Volumes 1 and 3 of this work were published earlier and they have already been reviewed [*V.B.* **29,** 4026]. Two-thirds of volume 2 are devoted to pathogenesis and pathology of human infection. The rest is taken up by a 135-page bibliography; a subject index and an index to citation of authors' names in the text. The three volumes can be obtained either in paper covers at DM 170 or bound in linen at DM 185 (about £15); individual volumes are not sold separately.

—R.M.

Daykin, P. W. (1960). **Veterinary applied pharmacology and therapeutics: formerly Hoare's veterinary materia medica and therapeutics.** pp. viii+767. London: Baillière, Tindall & Cox. 55s. **2764**

Although labelled as the successor to Hoare's Veterinary Therapeutics (1895–1942) this is an entirely new book and the text bears little resemblance to its predecessor. There are notes on prescription and dangerous drugs legislation but the main part is divided into three sections:—systemic materia medica; chemotherapeutics; specific therapeutics and biologicals (vitamins, hormones and vaccines). Within the chemotherapy section antibiotics are adequately dealt with in 111 pages and sulphonamides in 30 pages. Each chapter closes with a list of references taken mainly from recent publications. Relatively new drugs that have not found their way into this edition are the bephenium anthelmintics and the organic phosphorus insecticides (and anthelmintics) ronnel ("Trolene"), trichlorphon (Dipterex) and Bayer 21/199 ("Asuntol"); but in every other respect the book is well up to date. The nomenclature of the British Veterinary Codex of 1953 has been adopted and it is therefore necessary for the user of this book to refer to the Codex for details of chemical or physical properties and adopted standards. [The 1959 supplement to the Codex was published too late for this edition.]

No practising veterinary surgeon can afford to be without this book.—R.M.

Welch, H. & Marti-Ibañez, M. D. [Edited by.] (1960). **Antibiotics annual 1959-60.** pp. xvii+1034. New York: Antibiotica, Inc. $15.00. **2765**

This is the seventh of a series which is now so well known as to need no introduction. Among the 160 papers there are fewer than usual of direct veterinary interest. Seven papers on griseofulvin merit special attention (pp. 663–704): two of them discuss the mode of action and the rest describe its use in human ringworm. Effects of procaine penicillin in germ-free chicks infected with either *Cl. welchii* or *Str. faecalis* are reported by B. S. Wostmann & others on pages 873–878.

Special emphasis had been placed on 8 new antibiotics. Five were prepared from various *Streptomyces* species isolated from soil: aspartocin (active against staphylococci), fervenulin (active against trichomonads in mice), streptozotocin (active against a variety of bacteria), paromomycin (active against intestinal amoebiasis) and rifomycin. The others are colistin sulphate and methanesulphonate (obtained from a new soil bacillus in Japan); potassium penicillin-152 or potassium(alpha-phenoxymethyl)-penicillin which is very rapidly absorbed after oral administration; demethylchlortetracycline (the subject of 12 papers including one on treatment of human brucellosis on pages 429–439). Studies on furaltadone, a new nitrofuran, are described on pages 776-784.—R.M.

Schwarze, E. & Schröder, L. (1960). Kompendium der Veterinär-Anatomie. Band I: Einführung in die Veterinär-Anatomie. Bewegungsapparat. **[Compendium of veterinary anatomy. Volume I. Bones, joints and muscles.]** pp. xii+322. Jena: Gustav Fischer. DM 24.80. **2766**

This compendium is not intended to replace the existing German textbooks on veterinary anatomy but is a dissection guide and reference book for students. The descriptive part, written in a concise style, deals with bones, joints, muscles, and the mechanics of the locomotory apparatus. The horse is the prototype but other domestic mammals are also dealt with. Further parts on organs, vascular system, integument, nervous system and sensory organs are to follow. This work contains 226 very useful black-and-white and half-tone illustrations. It is sturdily bound and generally well produced.—E.G.

Stevenson, J. H. F. (1959). **Mink in Britain.** pp. 144. Exeter: Pitt's Bookshop. 3rd revised edit. **2767**

This is a booklet for prospective mink breeders which deals with housing, feeding, reproduction and genetics, general management, humane killing, skinning, and treatment and marketing of pelts. Diseases are dealt with in a chapter by K. W. Head, reprinted from the *Fur Farmers' Gazette.* The booklet is well produced.—E.G.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

Adams, M. H. (1959). **Bacteriophages.** pp. xviii + 592. New York (& London): Interscience Publishers. $15.00.

Arthur, D. R. (1960). **Ticks: a monograph of the Ixodoidea. Part V. On the genera Dermacentor, Anocentor, Cosmiomma, Boophilus and Margaropus.** pp. xvii + 251. Cambridge: University Press. 60s.

Bloom, F. (1960). **The urine of the dog and cat: analysis and interpretation.** pp. xi + 84. New York: Gamma Publications, Inc.

Borchert, A. (1959). Parasitäre Krankheiten unserer Haustiere—Verhütung und Bekämpfung. [**Parasitic diseases in domestic animals.**] pp. viii + 107. Leipzig: S. Hirzel. DM 7.50.

Campbell, I. R. & Widner, E. M. (1958). **Annotated bibliography: the occurrence and biological effects of fluorine compounds. Volume 1. The inorganic compounds. Books I & II.** Book I pp. ii + 507 & Book II pp. 509-955. Cincinnati, Ohio: Kettering Laboratory, University of Cincinnati.

Doss, M. A., Humphrey, J. M. & Segal, D. B. (1960). **Index-catalogue of medical and veterinary zoology. Supplement 10. Authors: A to Z.** pp. 357. Washington: United States Government Printing Office. $1.25.

Gunsalus, I. C. & Stanier, R. Y. (Edited by) (1960). **The bacteria: a treatise on structure and function. Volume I: structure.** pp. xiv + 513. New York (& London): Academic Press. $13.00.

Kelley, R. B. (1960). **Principles and methods of animal breeding.** pp. x + 358. London: Angus & Robertson. 3rd edit. 42s.

Perry, E. J. (Edited by) (1960). **The artificial insemination of farm animals.** pp. viii + 430. New Brunswick: Rutgers University Press. 3rd revised edit. $6.50.

Schönherr, W. (1960). Standardmethoden der tierärztlichen Milchuntersuchung. [**Standard methods in veterinary milk examination.**] pp. viii + 56. Jena: Gustav Fischer. DM 18.15.

Schulze, W. (1960). Leitfaden der Ziegenkrankheiten: für Tierärzte und Studierende der Tierheilkunde. [**Diseases of goats.**] pp. x + 124. Leipzig: S. Hirzel. 2nd edit. DM 9.90.

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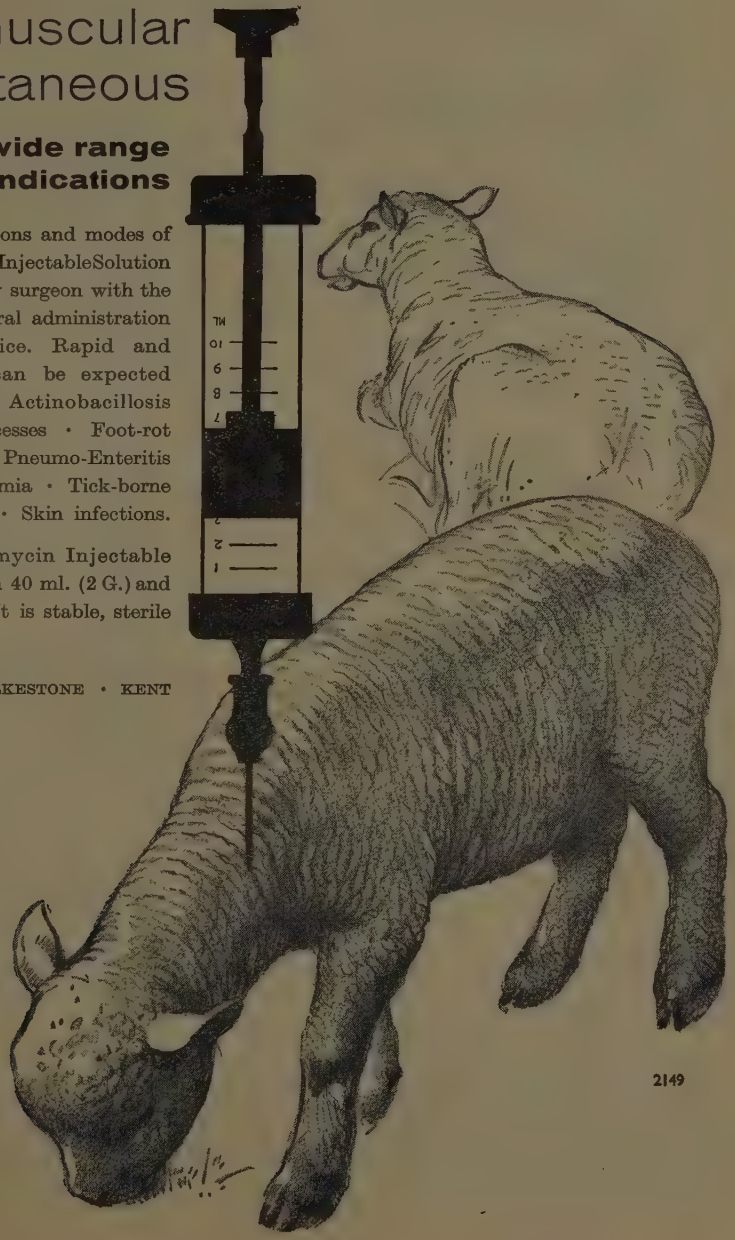

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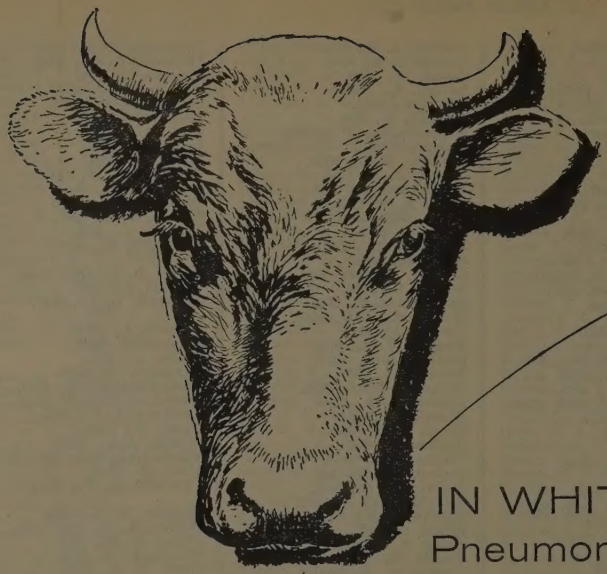
ERRATA

V.B. **30**, abst. 1745. The first author's name is Ablett, R. E.
abst. 2132. The last sentence should read: Smooth and rough strains were usually phage susceptible; mucoid strains were usually phage-resistant.
abst. 2212, line 2 of title. For "China", read: Chiba.
abst. 2238, line 1 of title. For "Nichloran", read: Nicochloran. In line 7 of abst., for "PHC", read: BHC.
abst. 2433. The author's initials are K. I.
abst. 2538. The first author's name is Nilakantan, P. R.
abst. 2617. (a) The first sentence should read: "Hygromix", fed over 8 weeks to 400 fowls in a concentration of 0.5% in the feed, twice the effective dose, expelled *Ascaridia galli* and *Heterakis gallinae*. (b) In line 7, for "up to 0.5%/kg. feed", read: up to 0.5% in the feed.
abst. 2672. The author's name is Santiago Luque, J. M.
abst. 2741. The second author's name is Viñaras Garcia, D. R.



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